STDF PROJECT GRANT APPLICATION FORM

Project Title	**Beyond Compliance: Integrated Systems Approach for Pest Risk Management in Southeast Asia**
Objective	To enhance competency and confidence in the SE Asian subregion in applying Systems Approach to trade opportunities through the use of innovative decision support tools.
Budget requested from STDF	USD 600,000
Total project budget	USD 904,686
Full name and contact details of the requesting organization(s)	**Malaysia: Ms. Wan Normah Wan Ismail** Director Crop Protection and Plant Quarantine Division Department of Agriculture Wisma Tani Jalan Sultan Sallahuddin 50632 Kuala Lumpur Malaysia Tel: +603-20301401 Email: wann54@yahoo.com; wanis@doa.gov.my **Vietnam: Dr Duong Minh Tu** Director Plant Quarantine Diagnostic Centre Plant Protection Department Ministry of Agriculture and Rural Development Department of Plant Protection 149 Ho Dac Di, Dong Da, Hanoi, Viet Nam Tel: 84-4-8513746 Fax: 84-4-8574719 Email: thanhtam1992@yahoo.com; pqdc_ppd@yahoo.com.vn **Thailand: Ms. Tasanee Pradyabumrung** Senior Standards Officer National Bureau of Agricultural Commodity and Food Standards Ministry of Agriculture and Cooperatives 50 Phaholyotin Rd. Chatuchak Bangkok, 10900 Email: tasanee@acfs.go.th

	Philippines: Mr Luben Q. Marasigan Chief of Plant Quarantine Service Plant Quarantine Service Ninoy Aquino's International Airport Pasay City, Metro Manila, Philippines Tel: +632 832 2982 Mobile: +63 (0)924 492 1759 Email: lobs_marasigan@yahoo.com **Indonesia: Dr Arifin Tasrif** Director Agency for Agricultural Quarantine (AAQ) Ministry of Agriculture Jl: Harsono RM No. 3 E Building (5th floor) Pasar Minggu, Jakarta Selatan 12550, Indonesia Tel.: (+62) 21 7816482; mobile-081310939779; 7805641 ext. 1508 Email: arifintasrif@yahoo.co.uk
Full name and contact details of contact person for follow-up	Co-applicants responsible for management and technical support: **CABI Southeast and East Asia** Bldg 19, MARDI HQ Complex, P.O. Box 210 Serdang Selangor Malaysia Contact: Dr Keng-Yeang Lum Phone: +60 (3) 8943 2921 Email: ky.lum@cabi.org **Queensland University of Technology (QUT)** GPO Box 2434 Brisbane QLD 4001 Australia Contact: Dr Peter Whittle Phone: +61 (0)434 729 855 Email: peter.whittle@qut.edu.au **Imperial College London (ICL)** Centre for Environmental Policy Silwood Park Campus Ascot, Berkshire, SL5 7PY United Kingdom Contact: Dr Jon Knight Phone: +44 (0)2075942496 Email: j.d.knight@imperial.ac.uk

I. BACKGROUND

1. SPS situation and issues

Sanitary and Phytosanitary (SPS) capacity is a priority in all of the Southeast Asian countries and has been the subject of extensive study and development projects. In the area of plant health, Naumann and Lee (2009) suggest that success of SPS capacity-building programs can be measured by the number of bilateral quarantine agreements operational or under negotiation; and while these have remained static or tended to grow in number very slowly in some countries, in some (the Philippines, Thailand and Vietnam) they have risen significantly. These countries and others participate consistently in standard setting processes, through the International Plant Protection Convention (IPPC) and the relevant regional plant protection organisation (RPPO).

This project is focused on an aspect of SPS capacity – development of pest risk management plans using a combination of measures – in the Southeast Asian (SE Asia) subregion of the membership of the Asia and Pacific Plant Protection Commission (APPPC), one of the RPPOs under the International Plant Protection Convention (IPPC). National Plant Protection Organisations (NPPOs) from five of these countries – Indonesia, Malaysia, the Philippines, Thailand and Vietnam – are requesting and participating in the project, but the outputs are relevant to other countries in the subregion and to the region as a whole.

STDF provided a Project Preparation Grant for this project (PPG-328) to the NPPO of Malaysia, Jalan Sultan Sallahuddin, and technical advisors from Imperial College London (ICL) and Queensland University of Technology (QUT), under which a workshop was held in Kuala Lumpur in August 2010. Each participating country (those in this proposal plus the Philippines) made a presentation on its SPS capacity and needs in relation to the application of Systems Approach to pest risk management. The workshop made clear that many countries are employing or seeking to employ Systems Approach, but faced difficulties relating to lack of data and uncertainty about the risk mitigation measures and their application. They were seeking to use this approach more fully because of problems that were shared between countries, such as technical concerns about the food and occupational safety of some single treatments (generally chemical) and the high risk of trade disruption with single treatments when a failure occurs. There was also a perceived power imbalance in trade agreements in which risk mitigation measures were imposed, rather than developed bilaterally.

A base level of capacity is needed for this type of project for the early testing phase. Yet it also is fair to say that the countries participating cover a range of capacity and experience, not only in the application of ISPM no. 14, *The Use of Integrated Measures in a Systems Approach for Pest Risk Management* (FAO, 2002), but also in terms of engagement with private sector, quantitative analysis in Pest Risk Analysis (PRA), and consistent and verifiable application of risk management plans for trade. These SE Asian countries already engaged in systematic strengthening of phytosanitary capacity have stated interest in moving on to improved Pest Risk Management, both as exporters and importers.

References:

Food Chain Evaluation Consortium [FCEC] (2010). Evaluation of the Community Plant Health Regime. DG SANCO, European Commission, Brussels, Belgium. Report 386pp and Annexes 314pp http://ec.europa.eu/food/plant/strategy/docs/final_report_eval_en.pdf
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Naumann I & Lee W 2009. Sanitary & Phytosanitary Capacity Building Program for ASEAN Member Countries. Australian Government Dept of Agriculture, Fisheries and Forestry, Canberra.

Van der Meer K 2007. Overview of SPS Capacity Building Needs Assessments and Compliance Studies for Cambodia, Lao PDR and Vietnam 2001-2006. Standards and Trade Development Facility, Geneva.

STDF. 2010. Mobilizing Aid for Trade for SPS-related technical cooperation in the Greater Mekong Sub-Region. STDF Briefing no. 5. Standards and Trade Development Facility, Geneva.

Whittle, P., Quinlan, M. & Bin Tahir, H. 2010. *Beyond Compliance: Report on workshop for STDF Project Preparation Grant 328. Developing trade opportunities: an integrated systems approach for pest risk management.* Report of workshop held in Kuala Lumpur, 16-19 August, 2010. 28pp

2. Links with national development strategies and policies

Developing countries in the subregion have a high dependence on agriculture and development of the agriculture sector is essential to obtain food security, a reduction in poverty and sustainable growth. This is also true in the more developed countries in the subregion. In recent years, Malaysia has reorganised its quarantine service and allocated major new resources to relevant technical areas. The Philippines has had a number of initiatives in the past decade, focusing on training using local expertise, and building technical capabilities in centres and ports. Thailand has revised its plant quarantine regulations and is integrating its quarantine research group with its regulatory and operational group. Also it is providing annual budget allocations for technical pest resources. Vietnam has drafted a new plant protection and quarantine law and has increased plant health staff.

Such individual national initiatives demonstrate an increasing commitment to SPS capacity. Entry to high-value markets in global trade is a priority in the subregion and the need for compliance with SPS requirements is clearly understood. Increased compliance with SPS requirements has been shown as a "key challenge to further unleash export potential" (STDF, 2010).

At the same time, countries are waking up to the impact of import policies in this sector. Imports without adequate risk management measures have introduced numerous pests to countries in the subregion over the past decade, with the opening of borders and increase in trade. Most find that detection of a new pest occurs only after it has become well established (Whittle et al 2010). The contiguous countries then face new introductions along unprotected borders, so that the subregion becomes harmonised – not in their phytosanitary protection, but in their phytosanitary problems.

For the subregion, the 2007 ASEAN (Association of Southeast Asian Nations) Charter envisages overcoming SPS barriers as providing a major contribution to economic integration and development. It identifies Food, Agriculture and Forestry as a 'priority integration sector' and requires 'harmonisation' of SPS measures. The Strategic Plan of Action on ASEAN Cooperation in Phytosanitary Measures (2005-2010) calls for harmonisation of phytosanitary measures, compliance with WTO/SPS requirements, strengthening of national pest risk analysis frameworks, and biosecurity planning. SPS issues are detailed in the draft ASEAN Trade in Goods Agreement (ATIGA) and the ASEAN Australia New Zealand Free Trade Agreement (AANZFTA).

The Asian Development Bank (ADB) draft Action Plan for improved SPS in cross border trade cites improvements in other components of a sound plant health system such as enhanced diagnostic capacity, improved laboratories, low cost disinfestation systems and improved quarantine treatments. This has been especially significant in Cambodia, Lao PDR, Myanmar and Vietnam. Vietnam participated in a preparatory survey to strengthen phytosanitary measures, with financial support from Japan International Cooperation Agency (JICA). This sets the stage for the NPPO's cooperation with external resources to achieve national objectives in plant health.

Ongoing regional efforts have complemented national ones. For example, over the last five years workshops in ISPM awareness, pest surveillance, PRA, diagnosis and taxonomic identification of specific plant pests and diseases and management of pest and disease collections were supported by CABI SEA in benefit of the SE Asian region. All of these components could constitute phytosanitary measures and/or control points (model nodes). The CABI SEA regional project funded by Canada's IDRC on "Knowledge Networks and Systems of Innovation to support Implementation of Sanitary and Phytosanitary Standards in the Developing Countries of Southeast Asia" identified the major constraints faced by developing countries in the region in their implementation of ISPMs. IDRC has since given support to the establishment of the ASEAN Regional Diagnostic Network (ARDN) for sharing plant pest diagnostic knowledge and resources.

Although significant PRA-training opportunities have been provided in SPS capacity building programs, improvement in PRA remains a key objective as noted in the ADB SPS Action Plan for

GMS countries. Each country in the PPG-328 workshop emphasised a lack of confidence in the development of pest risk management plans in line with the results of the PRA. The concepts of Systems Approach were particularly problematic. The strengthening of national capacity for PRA will benefit from including improved decision making in the Pest Risk Management phase.

This project additionally supports national and regional objectives to reduce pesticide use and employ Integrated Pest Management (IPM) practices. Some SE Asian exporters have suffered a high number of detentions for pesticide residues. Overuse of pesticides is often in reaction to related pest detections in trade. The highest number of interceptions for regulated plant pests on commodity trade into Europe has come from SE Asia: well over 60% in 2009 (FCEC, 2010). The US NPPO has noted the same situation in recent years. Other countries may be trying to expand or initiate new trade without availability of highly efficacious end point treatments suitable for the commodity in question.

3. Past, Ongoing or Planned Assistance

The project has strong potential for linking into the Enhanced Integrated Framework (EIF) and Aid for Trade, because it will form the basis for maintaining trade and supporting new trade opportunities based on System Approach for pest risk management. Agricultural and trade systems that are developed and/or identified in the project will provide opportunities for investment in the establishment of good agricultural and trade practices through the supply chain. This overall approach of following a chain of production has been proven in terms of food safety in the processed food sector. This is relatively new and unsupported in the plant health sector of Southeast Asia.

In fact, in general support for SPS capacity in plant health in the region has been minor compared to animal health and food safety, against a backdrop of relatively poor plant health infrastructure, at least in CLMV (Cambodia, Lao PDR, Myanmar and Vietnam) countries. However, recent support has been given to build human capability and technical resources in plant health surveillance, border quarantine and treatments, and pre- and post-border activities including risk mitigation, biosecurity planning, pest risk analysis, plant pest and disease diagnostics and pest and disease reference collections. The Standards and Trade Development Facility (STDF) has facilitated support of SPS capacity evaluation and building, including through several sub-regional projects. Such projects strengthen specific components of SPS management systems that are crucial for success.

SPS-capacity-building programs are provided regionally or multi-country into ASEAN or APEC (Asia-Pacific Economic Cooperation) members, countries of the Greater Mekong Subregion (GMS) or the CLMV countries or bilaterally to country NPPOs or other agencies. SPS-related assistance has been provided in the region by Australia, Canada, Japan, USA, Norway and the European Community in particular, with different foci from these sources on regional or country issues, and particular areas of SPS such as plant and animal health and food safety.

Partners in this project are either participating in or are cognisant of essentially all plant health development programs in the subregion. There is no duplication with the proposed project and other initiatives. Instead, this project enhances the PRA framework already supported through other training and the international standards, by applying probabilistic modelling to manage uncertainty. Early technical training in the project will cover the basic concepts of Systems Approach and of the type of tools emerging in Europe, Australia and New Zealand to more easily design, evaluate and monitor Systems Approach-based pest risk management plans.

Coordination, in terms of information and participation as observers as desired, will be sought with all ongoing externally funded projects and programmes on PRA and general capacity building in the SE Asian region. Bilateral development agencies including JICA, NZAID and AusAID, were also contacted during this pre-funding period and may participate in the launch meeting at their own expense. New ties with environmentally focused projects can be forged for stakeholder involvement,

once the project is underway. This includes Integrated Pest Management programmes and even private Good Agricultural Practice registration schemes, as well as groups supporting reduction in pesticide use and protection from invasive species. Representatives of the most relevant of these groups have been kept abreast of the project proposal by individual correspondence. The most important new linkages will be with agricultural industry in locations or topics in which consultation has been minimal to date.

External to the SE Asian region, the European PRATIQUE project for enhanced PRA is in its final stage and outcomes are being monitored. ICL is a partner in PRATIQUE and has kept the Management Committee of that regional project informed of the link to this proposed project. Meetings were held with World Bank to discuss the PPG and with USDA/APHIS after the PPG Workshop. Great effort is being made to coordinate with the Australian NPPO in particular, but also other important importers in the region. QUT has attended meetings on Systems Approach and use of Bayesian Networks (BNs) convened by the Australian NPPO over the past two years. The Australian NPPO's internal work on this tool should be closely tracked by the future project team.

Australia's Cooperative Research Centres programme for National Plant Biosecurity (CRC NPB), of which QUT is a Core Participant, committed extensively to observing and participating in PRATIQUE in the past three years. In 2011 the CRC will make a bid for a further 7-year term from mid-2012, and it wishes to participate in implementation of PRATIQUE outputs if successful. The Beyond Compliance project is of great interest to the CRC in two regards: 1. Systems Approaches are a key strategy for developing biosecurity market access and the project takes advantage of relevant CRC expertise; 2. Collaboration with ICL is strategic and the CRC wishes to extend its current extensive engagement in SE Asian projects. External funding for this project, if based in the CRC NPB, will draw substantial in kind and cash funding for more expanded Australian participation.

Direct ties with delegates to the Commission for Phytosanitary Measures (CPM), the IPPC Secretariat, and the participants in the International Advisory Group on PRA (IAGPRA) will continue so that everyone is informed of the progress made and in agreement with the objectives and planned activities. We will articulate and share the potential contribution of this project to the ADB SPS Action Plan for GMS countries and, through reports to the Expert Working Group on Phytosanitary Capacity Building or by posting on the Technical Resources portion of the IPPC website. This appears in line with the recently adopted IPPC Capacity Building Strategy.

II. RATIONALE, JUSTIFICATION & OBJECTIVE

4. Specific problem to be addressed

International trade and travel can introduce exotic pests that pose a threat to both natural plant resources and managed crop and forest production. An effective plant biosecurity scheme, operating in each country and region, can prevent the introduction of exotic plant pests while still allowing movement of goods and people without undue restriction.

A critical factor in this system of balances is the use of pest management measures that are justifiable and in proportion to the threat posed. Beyond this point measures may be considered to be non-tariff trade barriers. Under the harmonised regimes of the International Plant Protection Convention (IPPC) and the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS), the National Plant Protection Organisations (NPPOs) use Pest Risk Analysis (PRA) to estimate the risk from specific trade or other pathways and to propose phytosanitary measures to reduce that risk to a level acceptable to the importing country.

The raison d'être for the PRA process, however, is to find the management options that will keep free trade "safe". The IAGPRA recognizes that the Pest Risk Management phase is often the weakest. This phase consists of evaluation of management options and selection of the best phytosanitary measure, or combination of measures, to apply to trade or other pathways to achieve an appropriate level of protection (ALOP). There has been relatively little support for capacity building in the decision-making process for the Pest Risk Management phase of PRA since the advent of the harmonised PRA approach.

Historically, guidance on Pest Risk Management has been general, as in the International Standard on Phytosanitary Measures (ISPM) nos. 2 and 11 on the overall PRA process, or more focused as in the ISPM no. 4 on pest free areas (FAO, 1995) or ISPM no. 14 (FAO, 2002) on the use of Systems Approach. Although more detailed, ISPM no. 14 in particular has proved challenging to implement. This is largely due to the perceived complexity of calculating a combined impact of measures when the efficacy of each measure is not well known. Importing country NPPOs therefore have been more likely to select the highly documented, end-point treatments (e.g. commodity treatments) that were developed under laboratory conditions to achieve a measurable impact on the described risk, even when such treatments have other disadvantages.

Now, the days of relying on such end-point treatments to "clean up" infested products are past. Importing countries' national objectives and consumer demands align more closely with Good Agricultural Practices (GAP) in the field, confirmatory targeted pest trapping, controlled handling along the chain from farm to fork and non-chemical interventions. Yet the challenge remains for the importing NPPO to justify a requirement for such combined measures.

Exporting countries also may prefer these combined measures over sole reliance on pesticides and fumigants. Currently when the exporting country's NPPO proposes equivalent options, many times there are years of delays before the importing NPPO reaches some decision. The opaque process is due largely to the lack of clarity on how to determine efficacy of measures. An internationally agreed framework for evaluating the impact or efficacy of phytosanitary measures (especially those other than end-point treatments) will support increased trade, while maintaining evidence-based pest management measures.

Using a BN offers a range of benefits to developing, negotiating and managing Systems Approaches agreements, compared to conventional systems:

- using modelling based on a control point approach to risk management, as opposed to ad hoc consideration of the effects of phytosanitary measures, allows a more structured and objective decision-making process;

- a Bayesian approach accommodates uncertainty in the model, which in most situations will be substantial due to a lack of quantitative data. Bayesian statistics can use expert estimates, which are often well-founded even where there is no published information. The sensitivity of the system to uncertainty in these estimates can then be tested, so that further data can be sought, or it can be demonstrated that additional data is not essential;

- developing a BN and populating it with node estimates can be a highly cooperative activity among stakeholders, which will potentially simplify agreement on jointly developed solutions;

- a BN is a learning system, so as data becomes available during trade or during a test period, the model can be updated. This also could provide a mechanism for monitoring and review of the trade and its phytosanitary security. It may also create opportunities for trade that is seasonal or otherwise restricted and thus requires monitoring of changes in key factors.

The project will directly support implementation of ISPM no. 14, '*The use of integrated measures in a systems approach for pest risk management*', which gives guidance on the use of a combination of measures that, when integrated, provide effective mitigation of pest risk in a way that is the least trade restrictive. (It also will apply to single measures, but these have been less problematic in the past). Systems Approaches are of increasing interest to NPPOs in the region for addressing emerging phytosanitary trade issues outlined elsewhere in this proposal.

A similar initiative has been taking place in Australia in light of the likely loss of an important post harvest pesticide. While this has been focused on domestic interstate trade, it follows international standards (ISPMs). Both Australia and New Zealand are in initial phases of developing BNs for supporting import and other strategic decisions in plant health and biosecurity. Australia has developed a new policy on using Systems Approach under consultation with private and public stakeholders.

A notable advantage of Systems Approach is that additional measures may be applied initially (when technical certainty or the statistical confidence level is low), then (after sufficient trade has taken place and data is available to increase the confidence level) may be removed. By the same token, if a system is designed that has unacceptable failure rates, additional measures may be added in an evidence-based manner. Both cases occur while trade is ongoing, often without requiring further regulatory or normative changes.

The system is simply a choice of how to manage and express the already ongoing use of data and lack of data. Decisions are being made without such a harmonised framework or tool. There are instances, such as the draft ISPM on Systems Approach for control of citrus canker, in which years of expert consultation have led to no final agreement. The expensive conclusion has been that no decision has been reached and no final draft ISPM has been submitted for national consultation and adoption by the CPM.

Finally, the project outcome will speed up consideration of proposals for equivalence (ISPM no. 24). Presently, while the guidance provided for equivalence is useful, the lack of agreement on how to determine efficacy results in challenges in implementation of ISPM no. 24 because each importing country or region may have different data requirements, or even inconsistent requirements, for analysis of efficacy. Originally it was understood that one cannot implement the ISPM on equivalence until a common understanding of efficacy and some ways to measure it had been achieved. This view was abandoned when a series of Expert Working Group meetings and consultations had not yet produced a satisfactory conclusion. Although the tool described in this project will not take the place of an ISPM on efficacy, it could very well enhance clarity on the concept and provide some useful examples for further discussion from a common perspective that was not held at the beginning of discussions regarding a proposed ISPM on efficacy.

All of these outcomes are related to the IPPC Strategy for Developing National Phytosanitary Capacity (Strategic Area 1, 2b and 6) in terms of enhanced implementation of ISPMs and the ability to monitor and evaluate performance, and the use of tools for phytosanitary systems that are fit for purpose and adapted to national and regional conditions. The process of stakeholder involvement in design of Systems Approach and the use of an agreed framework for negotiating with trade partners indirectly support Strategic Areas 5 regarding advocacy/communication by NPPOs. A project to support this approach to Pest Risk Management will be highly cost effective.

5. Target Beneficiaries

This project works at the level of trade policy and developing and operating SPS-based trade in plant commodities to higher value markets. Thus, the indirect and final beneficiaries include small farmers and all participants in the value chain from farm to export market. The value chain will benefit from

new opportunities allowing sale of product into higher value markets than currently available. This should result in higher returns on current production, but would require participation in Good Agricultural Practices. It may also confer greater stability of trade, since trade under Systems Approach should be more robust than trade based on single measures.

A simple calculation of the economic impact of possible trade resulting from the Case Studies will be presented with reports. However, realistically, the time frame will not allow for in depth calculations. Furthermore, assignation of the full resulting trade to only this project may prove false, as all of the components of the management system as well as the NPPO trade negotiating teams would have played a part.

6. Ownership and stakeholder commitment

There is substantial interest in this project, from both the subregion and the main trading partners. The NPPOs attending the PPG-328 workshop as potential participants were Malaysia (host organisation), Indonesia, Thailand, Vietnam, and the Philippines. Other countries in the subregion had expressed interest, including Singapore. Further interest emerged at a subsequent meeting on the South American Leaf Blight (SALB) consultations in December 2010 in Malaysia.

Criteria for countries to participate included:

- clear interest of risk management experts and NPPO executives to engage in the project;
- existing exports that required the NPPO to negotiate a plan and to oversee or monitor application of phytosanitary measures;
- experience with using combined measures or Systems Approach for an export market, or the recognized need to enhance this capacity;
- membership in the APPPC and contracting party to the IPPC.

At the PPG workshop's conclusion, each of the five countries expressed a desire to participate in the full project. The budget is presented to cover four of these countries' participation. We are seeking funds for additional countries to "buy in" with external funding to the project, but will aim for 2 regional import case studies and 3 national export examples with funding from STDF.

The project concept was originally presented by Imperial College London (ICL) and Queensland University of Technology (QUT) in conjunction with the Malaysian Department of Agriculture, in consultation with the APPPC. The resulting project design has taken into account all comments by the SE Asian representatives in the PPG funded workshop, with participation as already noted. Administration will be led by CABI and the research components will be led by ICL and QUT. The project will be undertaken together with the National Plant Protection Organisations of Malaysia, Thailand, Vietnam and the Philippines participating in the Case Studies. Indonesia will participate in the launch and workshop meetings and conduct a Case Study only if additional funds are obtained.

The project taps into clear organisational/political priorities by having individuals work on trade opportunities that are of existing policy significance to their NPPOs. The project links together NPPOs by running case studies in several countries at once; country-based case studies that will be of interest in other countries, as well as regional case studies. Inter-regional linkages will be further enhanced by joint training and reporting in the project, so that new individual capacity is supported collegially. Once the project is granted, candidates for graduate studies (PhD and MSc) will be identified as part of the Technical Framework and Case Studies WPs. One MSc student from ICL will participate under the Governance WP.

See **Appendix 4** for letters of support from the above organisations and other stakeholders.

7. Relevance for the STDF

The project directly supports two of the STDF themes:

Major - Theme 2: Capacity building for public and private organizations, notably with respect to market access.

Minor - Theme 1: SPS capacity evaluation and planning tools, including the need for and implications of international standards and their application.

STDF supported development of this project via Project Preparation Grant 328 (see above) for a consultative workshop in Kuala Lumpur in August 2010. The workshop confirmed a high degree of stakeholder support and a resolution to continue development of a full project. A major outcome of the project will be a tool that assists in development of trade agreements when a combination of risk management measures is considered most appropriate.

The project objectives have been articulated against a backdrop of Phytosanitary Capacity Evaluation (PCE) results that emerged from previous FAO work. Because of limited capacities, developing economies in the region have approached international standards, particularly those related to pest risk management, from the perspective of meeting importing country requirements. Application of Systems Approach allows phytosanitary and market access personnel to understand contributions of each individual management measure to the reduction of risk. Greater confidence in the Pest Risk Management component will potentially enable faster negotiation of trade and a greater openness to new phytosanitary trade agreements based on Systems Approach.

8. Development Objective

SE Asian NPPOs have acknowledged the importance of capacity in PRA and the Pest Risk Assessment phase through ongoing training, projects and programmes. This project in the Pest Risk Management component will potentially enable faster negotiation and a greater openness to new phytosanitary trade agreements based on Systems Approaches.

At the PPG-328 workshop in Kuala Lumpur in August 2010, there was a high level of agreement on the importance of finding new ways to develop trade agreements based on Systems Approach, in order to solve problems with single-measure agreements. NPPOs were enthusiastic to participate in a future project applying the Control Point/Bayesian Network template in Southeast Asian case studies in order to develop the approach, to develop new trade opportunities, and to improve country and regional capacity.

The workshop decided the project should be named "*Beyond Compliance*", recognising that it will lead to more sustainable trade opportunities in plant products/commodities by implementing a new, versatile and effective method to map out and model pest risk management in trade. Such a transparent, mutually agreed framework for understanding how much each phytosanitary measure – or measures in combination – reduces the estimated risk could open new trade and present alternatives to prohibition for existing trade that has encountered problems.

9. Expected End-of-project Situation and Sustainability of Project Results

At the end of the project, we expect to have a tested tool that can be applied without specialised knowledge in modelling. There will be competency in each participating country, in the form of at least one resource person who can share the approach with colleagues within his or her NPPO, and at

the regional level. If the opportunities for MSc or PhD training are taken up, the competency in the tool will be highly developed so that the country resource person might provide South-South training, or training to other sectors in his or her own country.

The beauty of the type of tool proposed is that it is easy to subsequently improve it, develop "plug in" enhancements and share it. For example, a database of estimated costs or efficacy of internationally recognised treatments (e.g. those included in ISPMs) could be developed in some future project, to provide more precise input to nodes in the existing tool. The tool will either be based on free share ware, or inexpensive software that is readily available. There will be no intellectual property barriers for its application, although there may be some advantage to licensing to facilitate creating a registered continued learning group of users.

The project is timely in engaging the Southeast Asian subregion in developing this method for Systems Approach pest risk management, since it is under consideration simultaneously in the European Community and Australia and New Zealand. This will enable the Southeast Asian subregion to participate in new opportunities rapidly. To the contrary, if not involved at this stage, the participating countries may face the need to use an already completed tool that might not encompass their own contextual concerns and insights.

The PPG workshop participants decided the project should be named "*Beyond Compliance*", recognising that it will lead to more sustainable trade opportunities in plant products/commodities by implementing a new, versatile and effective method to map out and model pest risk management in trade. Such a transparent, mutually agreed framework for understanding how much each phytosanitary measure – or measures in combination – reduces the estimated risk could open new trade and present alternatives to prohibition for existing trade that has encountered problems. Agreeing on a harmonised framework requires less investment of resources and time by each individual country, avoids prolonged delays in decision making and clarifies criteria for decisions.

III. IMMEDIATE OBJECTIVES, OUTPUTS & ACTIVITIES

10. Objectives, outputs and activities, including logframe and work plan

The project addresses a range of common issues in trade agreements for plant commodities based on single risk-mitigation measures. Systems Approaches may help solve these issues, but can be complex to develop and negotiate due to structural and quantitative uncertainty about the system. Uncertainty can be managed using probabilistic modelling and the project will implement a Control Point/Bayesian Network modelling approach to develop Systems Approaches for a set of case studies in Southeast Asia. It is not necessary to have such a tool to develop a Systems Approach; experience and a recent global review conclude, however, that many NPPOs are either lacking in experience with Systems Approach or lacking in confidence in its application. This tool will clarify thinking around proposed independent, dependent and verification measures and ease comparisons of similar pest risks.

I. PROJECT OBJECTIVES

1. To enhance competency and confidence in the SE Asian sub-region in applying Systems Approach to trade opportunities through the use of innovative decision support tools

2. To provide and test decision tool(s)

3. To implement the BN/control point approach to Systems Approaches
   - Evaluation of method

- Potential trade opportunities progressed
- Distillation of experience into a guidance document and/or software based tool
- Facilitate adoption and use of method globally.

II. PROJECT OUTPUTS

1. A review that describes pest risk management for imports and exports in the region, including design and evaluation of these measures
2. Case studies of priority trade opportunities using Systems Approach for pest risk management (three export and two import cases have been identified for study; the tool can be demonstrated with fewer, should any barrier arise to completion on any one of them)
3. Demonstration and evaluation of quantification and analytical tools (specifically Control Point and Bayesian Networks [CP-BN]) to support use of Systems Approach
4. Establishment of a competency base with the methodology in the Southeast Asian subregion
5. A plan for a harmonised framework for Systems Approach.

Outcomes of the application of Systems Approach include more robust pest risk management in the region, greater inclusion of stakeholders in the process, more confidence in trade negotiations and new opportunities for trade in a phytosanitary context.

III. PROJECT ACTIVITIES

Activities are outlined in the Work Plan (Appendix 2), which also shows the allocation of funds by activity. The activities are aligned with project objectives in the logical framework in Appendix 1. The participating experts for management, technical support and implementation are presented in Appendix 3, along with a brief description of responsibilities. Below is an outline of the Work Package activities.

A. WORK PACKAGE: TECHNICAL FRAMEWORK

Objective: To provide technical support for application of CP-BNs to Systems Approach case studies and develop the underlying decision support tools for a harmonised framework
WP Leader(s): Technical Framework WP Leader – QUT
Activities:

- Establish additional data requirements for PRA approach – what is needed to move from PRA to CP-BN
    - Uncertainty/probability
    - Risk management options
        - Identifying independent/dependent measures
- Software choices
- BN concept and theory
- Best practice eliciting expert opinion
- Validation of the CP-BN approach
    - Evaluation of case studies

- Sensitivity Analysis
- Simulations

- Technical development of decision support tools
- Support MSc or PhD students involved in the project

Technical support will be led by QUT with input from ICL for user enhancements and computer model support.

B. WORK PACKAGE: CASE STUDIES

Objective: To demonstrate the control point BN (CP-BN) method for Systems Approaches

- Apply the method to case studies in the SE Asian sub-region
- Progress priority trade opportunities
- Establish a regional base of competency with the methodology
- Evaluate and make recommendations for harmonised policy

WP Leader(s): Technical WP Leader plus Country Project Leaders
Activities:

- Final choice of case study
- Obtain or prepare PRAs for case studies
- Develop Control Point Bayesian Nets (CP-BN) for each example
    - Proposed 3 National (export) and 2 Regional (import) Case Studies
- Identify gaps/request additional data
- Sensitivity analyses
- Revise guidance on going from a PRA to this model and modify CP- BN
- Individual case study reports
- Merged report of case studies
    - Lessons learned/evaluation

Funding to support three national (export) and two regional (import) Case Studies is contemplated in the budget. Final case study selection will be done by the end of the launch meeting of the project.

Case Studies proposed during the PPG Workshop

Commodity	Exporting country	Importing country
Fresh produce (not rubber plants) that may carry South American leaf blight of rubber	Countries with SALB	Regional
Oil palm planting material	Countries outside the region	Regional
Dragon fruit	Vietnam	South Korea, Taiwan
Jackfruit	Malaysia	China, Australia
Orchid cut flowers	Thailand	Europe
Mangosteen, avocado	Philippines	USA

C. WORK PACKAGE: GOVERNANCE

Objective: To increase confidence in the use of Systems Approach within the government's role; harmonised policy framework, linked with decision support tools
WP Leader(s): ICL
Activities:

- Institutional approaches to Pest Risk Management
    - Existing approach
    - Documentation and support for audits
    - Concepts of Systems Approach
- Enhanced stakeholder engagement
    - Review current situation
    - Share best practice for collaboration with stakeholders, specific to Systems Approach (e.g. case studies)
- Translation of project results to international plant health framework
    - Create strategies for negotiating on Systems Approach
        - Issues of equivalence
    - Interact with IPPC initiatives such as Implementation Review for related ISPMs
- Validate project approach and outputs
    - Refinement of milestones and measure of project impact
    - Reaction of trading partners

D. WORK PACKAGE: COMMUNICATIONS

Objective: To maintain communication within the project and disseminate results to stakeholders
WP Leader(s): CABI SEA
Activities:

- Manage monthly project calls
- Organise project workshops and training
- Monthly reporting on status of milestones
- Coordinate with the APPPC and the IPPC activities
- Liaise with other regional bodies (e.g. ASEAN)
- Prepare dissemination materials (e.g. posters, brochures, articles, subject reports, press releases)
- Manage website or other platform for work space for project
- Any procurement of computer equipment or internet services

E. WORK PACKAGE: ADMINISTRATION

Objective: To ensure the smooth and successful achievement of project objectives
WP Leader(s): Project Manager, CABI SEA
Activities:
To provide all aspects of administrative support to WP leaders and staff, including:

- Liaise with funder
- Contracting
- IP management and project branding
- Financial records and reporting (in conjunction with individual budget lines)
- Monitoring milestones
- Progress reports and final report

11. Public-public or public-private cooperation

The NPPOs of four or five countries will be interacting with each other, their RPPO, and with NPPOs of target market countries, some of which are exploring how to participate in the project itself.

The project involves the review and modelling of potential trade opportunities for export of plant commodities to biosecurity-sensitive importing countries. Clearly this involves intimately the market supply chain and it is logical to involve the private sector in the project from the outset. This was discussed at the PPG 328 supported workshop and accepted as a principle, even though most countries have little experience in this open engagement during the PRA phase.

12. Risks

Assumptions and risks
A number of risks to the completion of the project have been identified during its formulation. These are summarised in Appendix 1. In order to reduce and manage these risks, a number of actions have been incorporated into the project. In those instances where some risk is outside the control of the project partners, measures have been taken to minimize the impact of any such events.

Actions are described under each opportunity/risk identified.

Recruitment of supplementary funds
Description: The project is substantial in scope: activities have been designed to match the funding from STDF's preferred limit of USD 600,000 plus the considerable sum of in kind contribution already secured. Further Case Studies may be introduced to the project as additional funding arises, in particular with the Philippines since that NPPO participated in the initial planning and can attend the project launch meeting and final workshop. However, at this level of funding, the administrative and technical support could not accommodate more than one buy in. Activities related to governance are very minimal in this project. Additional funding in that area would allow for broader scope in the translation of the technical tool to actual trade agreements.

Upon disbursement of funds, QUT will receive an additional, proportional contribution through an Australian government program that will provide overheads for that group's participation and possibly additional staff support. (This aspect has a high likelihood and an important impact, which is why the funding will all be directed through this institution to the managing institution.) This source and other supplementary funds will enable QUT to participate more fully in Year 2. Additional funds would enhance workshop participation and allow for further training activities and dissemination of results, possibly beyond the two year period.

Likelihood of risk: *Moderate*
Impact: *Moderate*
Mitigation: After submission of the main project, seek to obtain supplementary funds.

i. Collaboration of necessary stakeholders obtained e.g. industry
Description: For the project to succeed fully, the collaboration and involvement of commercial and industrial stakeholders is important as they will provide details about production chains for the target agricultural product, bring insights to what measures will work in reality and what could affect their impact, and drive the need for trade agreements as import and export markets are developed.

Likelihood of risk: *Low*
Impact: *Moderate*
Mitigation: Ensure early involvement of industry stakeholders through invitations to workshops and discussions groups and through publicity of project in suitable media

ii. Other necessary conditions exist (e.g. political stability, national commitment to address SPS constraints, government support and allocation of resources, etc.)
Description: The project assumes that the broader arena in which the project takes place remains suitable for the implementation of the project i.e. collaboration between countries within the region and continued good access to all countries and stakeholders within them. Disruptions from natural disasters or political events are likely to cause delay rather than failure of the project. Travel insurance may help mitigate some of these impacts. Foreign exchange fluctuation would be likely to be favourable rather than costly to the project in such instances. (USD to GBP and to AUD rate changes would have greater impact.)

Likelihood of risk: *Low*
Impact: *Moderate/High*
Mitigation: The involvement of at least 4 countries within the project reduces this risk since it is unlikely that political or other events beyond the control of the project group will impact on all countries. It should therefore be possible to continue development of the approach and associated tools in the event of the situation in one country becoming unworkable.

iii. Collaboration of partners is successful

Description: The project is reliant on the cooperation and collaboration of partners in the project. If cooperation is not possible then the development of the ideas will be affected and it will be harder to ensure that the resulting tool is applicable across a range of countries and situations. The NPPOs are participating because ultimate decision making in this field lies with them.

Likelihood of risk: *Low*
Impact: *High*
Mitigation: The pre-project meeting has established good working relationships between the partners and a good level of understanding of what is required over the course of the project minimising this risk. The Chief Plant Protection Officer selected the individual counterpart, if not him or herself.

iv. National bodies and industry can be persuaded to use the new tool(s) and approach

Description: It may be possible to develop the tool(s) but they may not be taken up by some parties, thus lowering the project impact.

Likelihood of risk: *Moderate in short term*
Impact: *Low*
Mitigation: The tool supports decision making on the part of the party using it. It facilitates negotiation if the other trading partner also uses and understands the tool, but ultimately it is the management plan not the tool that will be approved in each agreement. The close involvement of industry and other relevant stakeholders from an early stage should ensure that the needs and views of the industry can be incorporated into the approach or any doubts addressed.

v. Tool is produced and is successful

Description: Production of the tool is reliant on the successful execution of the project within budget and on time. Success will depend upon the correct analysis of the situation and subsequent inclusion of this information in the approach and tool.

Likelihood of risk: *Low*
Impact: *High*
Mitigation: Good project management, the expertise of the partners and the understanding gained from the pre-project meeting will all ensure that this does not occur. Both QUT and ICL have been working with this tool prototype, in consultation with other experts, for plant health issues. In QUT, the Bayesian Research and Applications Group (BRAG) has in depth experience of communicating the modelling approach. ICL has provided user friendly, computer based representation of matrices and BN for decision makers in plant health and control of invasive species.

vi. Adoption rates of tool(s) and results of project are both good enough to justify development of harmonised guidance for regional application of tool

Description: The approach and tool developed must be shown to be successful and appropriate for use in the region and sufficiently flexible to be used on the wide range of agricultural goods traded by all the countries within the region. The assumption is that all parties will recognise the cost effectiveness of using a harmonised approach rather than developing alternative approaches to supporting clear thinking in design and evaluation of Systems Approach.

Likelihood of risk: *Low*
Impact: *Moderate*
Mitigation: The inclusion of a number of countries both within the region and outside and a broad range of commodity types should ensure that the approach and tool(s) are appropriate for use in wide variety of situations. Lack of data is not an obstacle to application of such a tool. The expertise of the partner will also help to ensure that other scenarios are examined that are not covered by the case studies. Therefore the most likely source of this risk is if NPPO personnel change and the knowledge and confidence are not passed on.

vii. Harmonised guidance is applicable globally

Description: The harmonised guidance for application of the tool that is developed is appropriate for implementation at the global level, which is recognised by the CPM.

Likelihood of risk: *Moderate*
Impact: *Low*
Mitigation: The experience and expertise within the group should ensure that any harmonised guidance is drafted and produced in such a way that it can be understood globally. This guidance will be proposed to the CPM at the global body for plant health, for consideration. The factor beyond this project is the adoption of the guidance. The tool may be successful without becoming an ISPM, for example. The CPM may recognise its use without formal endorsement or indeed fail to consider the issue if other agenda items take precedence.

viii. Methodology can be applied successfully to Systems Approach

Description: The Bayes-Net approach is one way of quantifying efficacy associated with plant risk management measures and its use has been explored in other projects (e.g. PRATIQUE) with success. This method has already been shown to be supportive of the application of Systems Approaches without full development of the method as a ready to use tool.

Likelihood of risk: *Low*
Impact: *High*
Mitigation: The experience of the group in the use of this approach in this specific area and in other related areas should mitigate against failure. At the PPG workshop the project partners found, with little exposure, they could manage a prototype of such a tool. The objectives of the project could be met with simpler versions of support tools should this methodology appear to be too demanding in some way. Project technical resources and steering committee members have decades experience with Systems Approach, to ensure the tool matches the needs of its application.

ix. Project proceeds as planned

Description: The day to day running of the project and communication among partners is a critical foundation for timely delivery of project outputs.
Likelihood of Risk: *Low*
Impact: *High*
Mitigation: The dedication of a highly experienced individual within CABI to specifically manage the project will ensure that clear lines of communication are established, deadlines are met and deliverables arrive on time. Regular meetings both face to face and virtual (on-line) will ensure that all partners are aware of progress and their responsibilities for delivering items at specific times.

IV. INPUTS & BUDGET

13. Inputs and estimated budget

Below is a detailed breakdown of the total budget (in US$) required to implement the project. A matching budget expressed in terms of the Work Packages is shown in Appendix 3.

Expenditure (describe in detail below)	Budget requested from STDF (US$)	Applicant's contribution (US$)	Budget requested from other donors*	Total
Personnel services (CABI, QUT, ICL, NPPOs and one expert consultant)	USD 365,231	USD 232,193		USD 597,424
Travel (MSc students, Steering Comm)	USD 32,744	USD 0		USD 32,744
Training (all costs of launch mtg and final workshop, *including travel* for invited participants)	USD 77,520	USD 45,900		USD 123,420
Other meetings & workshops (all costs of meetings within region on case studies, incl local transport, travel, related consumables and meeting facilities)	USD 27,000	USD 4,800		USD 31,800
IT Equipment (lap top computers, webcams and headphones, and software)	USD 5,100	USD 5,000		USD 10,100
Project management (CABI: 35% time executive manager and 50% time administrative)	USD 59,976	USD 16,793		USD 76,769
General operating expenses (local transport, courier, postage, consumables for all other Work Packages plus reserve for foreign exchange fluctuations)	USD 11,513	USD 0		USD 11,513
Other expenditures (promotional website or materials; and external evaluation)	USD 20,961	USD 0		USD 20,961
TOTAL	**USD 600,000**	**USD 304,686**		**USD 904,686**
* Some funding is anticipated from other donors, however, the exact sums are not known and it will not be secured before the project application. While this would enhance the project, it is not imperative for success (Refer to Section 12).				

Note that the salary for time of the two of the Steering Committee (Peralta as member, and Piao as Advisor) is not included in these calculations, but is an important contribution from FAO.

Areas where additional funding is particularly needed are for full participation of QUT staff in Year 2, broader participation in the launch meeting and final workshop and for additional support on the Governance WP, for translation of results to the IPPC and world trade context. Verbal commitments to cover costs of a relevant expert to the launch meeting, which will include sessions on Systems Approach fundamentals, have been obtained from the PRA sections of the American and Japanese NPPOs.

Further, the fifth NPPO that participated in the PPG Workshop process, or another one from the subregion, could carry out a Case Study, if additional funding is obtained. However, the proposed number of Case Studies are sufficient to demonstrate the tool and these other NPPOs may participate as Observers, without conducting separate Case Studies.

In kind inputs consist of:

- For “Personnel”, salary and associated indirect costs (e.g. infrastructure, operational, etc) for John Mumford of ICL in proportion to the expected time he will devote to project work as head of the team from the Centre for Environmental Policy; salary and associated costs for Kerrie Mengersen of QUT for time in supervision of project staff and students, and indirect costs for Peter Whittle of QUT (which will be recovered in part through some funding from the Australian government); 25% of the salary cost of the counterpart in each NPPO, except in Vietnam which is giving 10%). Additional costs for infrastructure for all personnel (not noted already) are also contributed by each entity but not calculated here. A substantial contribution from all parties, in particular the Malaysian NPPO, QUT, ICL and CABI, for project planning and preparation of applications for funding is still ongoing until funding commences. In addition to the USD 30,000 provided by the STDF PPG 328 and USD 30,200 estimated as in kind contributions at that time, this amounts to an additional USD 15,000 not included in the budget above or the PPG application.

- Under “Training”, the contribution is for tuition and other costs associated with two MSc students, who can be carrying out a degree program remotely (probably in Plant Biosecurity). Provision is made for travel to Australia for a short visit for each candidate. Supervision would be provided by the parties as noted above.

- “Other meeting costs” is estimated to be a contribution of USD 800 per Case Study meeting held that is not charged to the project. An expected 6 meetings are shown. This will be provided by the hosting country NPPO or industry sector.

- All parties are providing an existing infrastructure of IT equipment, valued here at USD 5,000. New equipment is only needed if the software requires a higher specification or the Case Study leader does not have a lap top computer to use in various locations.

- An estimated 28% overhead for office space and other infrastructure is provided in kind by CABI SEA.

This brings the total of in kind contributions to USD 304,686, which is over a third of the total cost of the project as presented, USD 904,686.

13. Cost-effectiveness

This project approach is to trial a tool using real, priority trade opportunities in one subregion. If the results are as successful as expected, the harmonisation of a such a tool will be far more cost effective than the current approach, which has not only each country in the subregion using different approaches, but all of their trading partners using different approaches for decisions regarding risk management as well. Although an ISPM exists to direct consideration of equivalence of proposed management plans, which often will employ Systems Approach, this tool would provide a more detailed mechanism for discussion between trading partners, focusing on a common method for estimating efficacy of measures.

The tool allows flexibility to have little or considerable data on the pest in question, so that it does not force the NPPO to fully complete the information in order to benefit from the insights provided. Even if the tool seems too difficult to any individual NPPO, or the arising case does not seem to justify its use, then the concepts behind it will support clear thinking for application of Systems Approaches.

A BN template can be applied to specific case studies of phytosanitary trade. The BN models a commodity pathway with which a regulated pest may be associated, such that estimates of the probability of the effect of a phytosanitary measure can be integrated to calculate the overall conditional probability of infestation/freedom from the target pest. This provides an estimated total efficacy of combined measures based on data along with expert opinion where data is lacking.

Furthermore, the BN enables node (control point) estimates to be varied, so that the impact of uncertainty can be evaluated. In other words, this tool can inform which missing data is most important, so that resources can be focused on research or data collection to address the "weakest link" of a System. This saves investment of resources on obtaining more data where the information will not alter the action taken – and bypasses the tendency to delay decisions due to uncertainty on particular issues.

The possibility of using an equivalent risk management plan for a plant pest risk could save significant resources when the option given by a trading partner does not fit with the realities of the exporting country. The PPG 328 Workshop revealed a lack of confidence in the application of this ISPM (no. 14, FAO 2002), so that enhanced confidence will facilitate improved application of an international approach. It has been demonstrated that use of harmonised approaches or rules can reduce costs to all parties involved in trade.

V. PROJECT IMPLEMENTATION & MANAGEMENT

14. Implementing / supervising organization

The project will be implemented by four to five Southeast Asian National Plant Protection Organisations (NPPOs) for application and testing on real trade opportunities already in the process of a PRA. CABI SEA will provide supervision and management of the project in terms of administration; for example, managing finances, organising travel, workshops, publications etc. QUT and ICL will lead the Work Packages on Technical Framework and Governance and provide the supervision for the entire project in terms of technical capacity. The Case Studies will be undertaken by the NPPOs of Malaysia, Thailand, Vietnam, and Philippines with the dedicated support of the other Work Packages (Administration, Communications, Technical Framework and Governance). See comments above on the possibility of Indonesia implementing a Case Study as well.

The activities related to PRA, design and evaluation of risk management plans and trade negotiation already comprise responsibilities of the NPPO and the nominated staff counterpart. The project support is to ensure that the NPPO personnel can dedicate some additional hours each week to communicating with the project team, participating in project meetings and ultimately using and reporting on the decision tool. Curriculum Vitae of project staff and proposed NPPO counterparts appear in Appendix 3. A capability statement for CABI SEA and consent to participate by QUT and ICL appear in Appendix 5.

15. Project management

To clarify responsibilities, management and administration, the project is divided into five 'work packages' (WP):

- Technical Framework
- Case Studies
- Governance
- Communications
- Administration.

The management structure has been agreed as follows:
A Project Manager (Dr A. Sivapragasam, of CABI SEA) will report to the project participants at large, to STDF and to the Project Steering Committee, as agreed in the discussions on reporting with the entire project team (see timing in the Work Plan, Appendix 2). The Project Manager leads the Administration Work Package (WP), including overseeing an administrative support staff person

supported by the project at 50% time. The Communications WP is also within CABI SEA and directly under the Project Leader's supervision.

The remaining three work packages will report to the Project Manager through each WP leader for the Technical Framework WP and Governance WP. The Case Studies WP will have a leader for each Case Study (i.e. 5 proposed). The structure and activities of the WPs was outlined above.

The project direction and milestones will also be reviewed by a Project Steering Committee (PSC). This will be done through meeting in conjunction with the CPM in Rome each year, either in person or virtual meeting for those not already attending, at the launch meeting and at the final workshop. Participation in the monthly project call may be necessary at some times. The role of the PSC is to maintain the direction of the project from the broad perspective, whilst the Project Manager maintains the project integrity. Any issues that arise that may affect the project's success such as completion of outputs on schedule, would be discussed between the management and the PSC as soon as identified.

The PSC will assist in definition of the milestones and measures of success for the project, with support from the Governance WP and management, and feedback from all parties.

VI. REPORTING, MONITORING & EVALUATION

16. Project reporting

Project reporting activities will be coordinated by the Administration WP, to provide an update to STDF and other interested parties covering: report of the launch meeting and inception; interim reports related to milestones (see below); report on the final workshop; and final project report.

However, several activities will be reported discretely as noted in the Work Plan. These reports will be shared as drafts to the project as a whole, with opportunity for comment and corrections within specified time frames. When final, those reports flowing from the other WPs through the Administration WP (Project Manager) will be submitted to STDF and others.

17. Monitoring and evaluation, including performance indicators

Specific outputs for each WP are already noted in the Work Plan (Appendix 2).

The Work Plan and Log Frame establish a set of discrete milestones and outputs that can be evaluated as partially or wholly complete at the nominated dates. We propose this list should be refined as the more detailed project plan is negotiated at the launch meeting. This allows broader discussion and agreement for achieving the outputs. The detailed schedule of milestones should be negotiated by 30 Sept 2011.

The Project Steering Committee will have input in to this discussion to introduce their expectations and insights from the beginning. Near the end of the project, an external evaluation will take place. Qualified experts have expressed interest from the NPPO of New Zealand and Ghana (both members of the IAGPRA). Selection will be done in consultation with STDF.

18. Dissemination of the projects results

The application of Systems Approaches is a common issue for countries around the world and the anticipated project outcomes are of very wide interest – not only in plant health but also in other SPS sectors. The results of the project therefore may be of interest to a wide group, beyond the project participants.

The Communications WP will support dissemination of results within the project and with immediate stakeholders. For this target audience, project results will be disseminated in workshops, written reports and articles. These are identified in the Work Plan. Milestones for dissemination may be specified in the milestone list as the detailed project plan is negotiated. Dissemination of results is considered an integral part of the project.

In this sense, SE Asia seems the perfect site for testing a new risk management approach and tool. Regional dissemination of the results of the country demonstrations will be through existing regional meetings including the biennial APPPC meeting (approximately August 2011 and 2013), regionally based workshops and meetings to review draft ISPMs, as relevant. The interest and collaboration of the APPPC Director and the former FAO project staff person, now returned to the Japanese NPPO's PRA Section, will facilitate this regional dissemination from the subregion level. From the perspective of importing countries, the advanced work in the region, principally by Australia, and the recent enhancement of plant health systems in some of the least developed countries indicates a high level of interest.

If the project is successful, it is anticipated that other regions will be interested in gaining experience in this risk management approach. For the global level, this can be done through the presentation of results to the CPM in the form of a proposal to add to the work plan (either for a new ISPM or for inclusion in capacity building activities), and/or through inclusion of the tool and some form of a user's manual in the unofficial portion of the IPPC website, the recently approved Technical Resources section of the portal. A more in depth approach could be based on a series of regionally based projects, a global project addressing only this topic, individual training courses or other means. A larger project will include some South-South training, with the demonstration countries becoming the training sites and those NPPOs becoming the regional experts.

For further pay back from this investment, we have opened discussions with ACIAR, the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF) and the Crawford Fund. Agencies in the USA, Canada and the European Community may also be supportive. These agencies will be asked to fund ancillary postgraduate studies and workshops, as well as further participation of the core staff and possibly a third year of the project to extend the work and to develop new case studies. (Also the Australian Cooperative Research Centre for National Plant Biosecurity has always intended to be a key partner in this project, but is presently in limbo while it prepares a bid for renewed funding in the coming year.)

Plans to reach out to stakeholders outside the immediate participants and through the plant health channels would require additional resources but provision of concise reports will inform those stakeholders of the opportunity and potential for application.

ATTACHMENTS

Appendix 1: Logical framework

Appendix 2: Work Plan (Appendix 1 and 2 comprise a single document)

Appendix 3: Terms of Reference for key staff involved in project implementation

Appendix 4: Letters of support from each organization to be involved in project implementation

Appendix 5: Evidence of the technical and professional capacity of the applicant to implement the project and letters of support from the supervising organization.

ACRONYMS

AANZFTA	ASEAN Australia New Zealand Free Trade Agreement
AAQ	Agency for Agricultural Quarantine
ACIAR	Australian Centre for International Agricultural Research
ADB	Asian Development Bank
ALOP	Appropriate Level of Protection
APEC	Asia-Pacific Economic Cooperation
APPPC	Asia and Pacific Plant Protection Commission
ARDN	ASEAN Regional Diagnostic Network
ASEAN	Association of Southeast Asian Nations
ATIGA	ASEAN Trade in Goods Agreement
AusAID	Australian Government Overseas Aid Programme
BN	Bayesian Net
BRAG	Bayesian Research and Applications Group
CABI SEA	CABI Southeast and East Asia
CLMV	Cambodia, Lao PDR, Myanmar and Vietnam
CP-BN	Control Point and Bayesian Networks
CPM	Commission for Phytosanitary Measures
CRC-NPB	Cooperative Research Centres programme for National Plant Biosecurity
DAFF	Australian Government Department of Agriculture, Fisheries and Forestry
EIF	Enhanced Integrated Framework
FAO	Food and Agriculture Organisation of the United Nations
FCEC	Food Chain Evaluation Consortium
GAP	Good Agricultural Practice
GMS	Greater Mekong Subregion
IAGPRA	International Advisory Group on PRA
ICL	Imperial College London
IPM	Integrated Pest Management
IPPC	International Plant Protection Convention
ISPM	International Standards For Phytosanitary Measures
JICA	Japan International Cooperation Agency
NPPO	National Plant Protection Organisation
NZAID	New Zealand Aid Programme
PCE	Phytosanitary Capacity Evaluation
PPG	Project Preparation Grant
PRA	Pest Risk Analysis
PSC	Project Steering Committee
QUT	Queensland University of Technology
RPPO	Regional Plant Protection Organisation
SALB	South American Leaf Blight
SPS	Sanitary and Phytosanitary
STDF	Standards and Trade Development Facility
USDA-APHIS	US Department of Agriculture – Animal and Plant Health Inspection Service
WP	Work Package
WTO	World Trade Organisation

APPENDIX 1: Logical Framework

	Project description	Measurable indicators	Sources of verification	Assumptions and risks
Overall objectives (goals)	1. To enhance competency and confidence in the SE Asian sub-region in applying Systems Approach to trade opportunities through the use of innovative decision support tools	1.1 A review describing design and evaluation of pest risk management measures in SE Asia (participating countries), with lessons learned from project. 1.2 Case studies of priority trade opportunities using Systems Approach for pest risk management 1.3 Existence of workable trade agreements based on Systems Approaches 1.4 Increased trade in food and agricultural products facilitated by Systems Approach	1.1.1 Review produced 1.2.1 Case studies documented and participants surveyed 1.3.1. Trade agreements exist and trade results (medium term) 1.4.1. Reported by NPPOs, trade associations or industry, and national statistics (longer term)	1.1.1.1/1.2.1.1 Collaboration of external stakeholders obtained by NPPOs, e.g. industry, other sectors of government. (Note: the lack of information about the pest risk will NOT constitute a risk using this approach.) 1.3.1.1/1.4.1.1Other necessary conditions exist (e.g. political stability, national commitment to address SPS constraints, government support and allocation of resources, etc.)
Immediate objectives (purpose)	1 To provide and test decision tool(s) 2 To implement the Bayes Net /control point approach to Systems Approaches	1.1 Production of decision tool(s) for quantification of risk using Systems Approach produced 2.1 Implementation of above tool(s) is achieved	1.1.1 Tools exist and can be applied by country counterpart in each Case Study. 2.1.1 Use of systems approach designed using Bayes Nets is evident in trade agreements	1.1.1.1Collaboration of partners is successful. 1.1.1.2. NPPO counterparts remain same throughout project. 2.1.1.1 Any other issue (e.g. additional pest identified) does not prevent the trading partners from accepting proposed trade

	2a Evaluation of method 2b Potential trade opportunities progressed 2c Distillation of experience into a draft Guidance document or other means of harmonisation 2d Adoption and use of method in other subregions, regions or globally facilitated	2a.1 Report on application of Systems Approach tool using case study data, and feedback from NPPO counterparts on competency and confidence 2b.2Existence of trade agreements based on Systems Approaches 2c.1 Draft Guidance document or other means of harmonised approach produced and presented for decision in region (through the RPPO) 2d.1 Tool accessed and evaluated by another subregion, region or globally.	2a.1.1 Report produced 2b.1.1Trade agreements in evidence 2c.1.1 Presentation to Regional Plant Protection Organisation (RPPO) forum 2d.1.1 Report on this activity in appropriate forum (e.g. RPPO Technical Consultation, CPM, etc); possible adoption	2a.1.1.1Tool is considered successful by target users 2a.1.1.2 Collaboration of partners is successful 2b.1.1.1 Industry and national governments adopt scheme 2c.1.1.1 Adoption and results are both considered sufficiently successful to justify formalising harmonisation rather than leaving choice to use tool as ad hoc 2d.1.1.1 Results of applying tool warrants continued and broader application.
Expected results	1. Decision tool for implementing System Approach produced using Bayes Nets methodology 2. Tool used to implement Systems Approach in trade agreements	1.1 Tool produced; target users surveyed 2.1 Evidence of use of tool in trade agreements	1.1.1 Tool exists and target users conclude it as of value to the design and evaluation of Systems Approach 2.1.1 Trade agreements based on Systems Approach include output from/reference to this tool	1.1.1.1Collaboration of partners is successful 1.1.1.2 Methodology can be applied successfully to Systems Approach 2.1.1.1 Tool is adopted and used by national and industry stakeholders

Activities	1. Organise launch meeting.	1.1 Meeting organised	1.1.1 Project partners, steering committee and stakeholders attend launch meeting	1.1.1.1 Project contracting, selection of case studies and confirmation of staff as counterparts proceeds as planned
	2. Establish website for project if required, or other means of sharing documents with entire project	2.1Website or document share created (Public and Private sections)	2.1.1 Website ("Docshare") accessible	As above
	3. Final selection of Case Study examples & obtain or prepare PRA and other supporting materials for the country Case Studies	3.1 List of Case studies produced with PRA material	3.1.1 Chosen Case studies reported to STDF	As above
	4. Prepare report on existing approach to risk management in the region	4.1 Report on existing risk management in region produced	4.1.1 Report submitted	As above
	5. Establish additional data requirements to move from a PRA to a Control Point – Bayesian Network	5.1 List of requirements produced	5.1.1 List published to project, included in final reports	As above
	6. Identify gaps/request additional data for CP-BN for each country case studies	6.1 List of gaps and required data created for each country case study	6.1.1 As above	As above

Activities	7. Review stakeholder engagement in SE Asian subregion and systems for reporting and documentation of practices (private sector and official)	7.1 Report on stakeholder engagement in SE Asian subregion and systems for reporting and documentation of practices (private sector and official) produced	7.1.1 Report available publicly	As above
	8. Revise final Case Study CP-BN and prepare reports on each	8.1 Case study reports produced for CP-BN	8.1.1 Reports submitted, available publicly	As above
	9. Analysis of effectiveness of approach to application of Systems Approach	9.1 Report on analysis produced	9.1.1 Report published	As above
	10. Workshop on final results and discussion of trade application	10.1 Workshop organised	10.1.1Workshop held	As above
	11. Recommend adoption of CP-BN as subregional, regional or international policy	11.1 Recommendation produced	11.1.1 Recommendation discussed in official forum (e.g. RPPO meeting)	As above
	12. Validate approach to project, internal evaluation. Preparation of lessons learned report	12.1 Report prepared	12.1.1 Report produced	As above
	13. Validate results of project, external evaluation.	13.1 Report prepared	13.1.1Report produced	As above

APPENDIX 2: Work Plan[1]

Activity PREPARATION ACTIVITIES PRIOR TO START DATE	Responsibility	Pre-start activities – Jan-Jun 2011 (Start Date: July 1, 2011)					
		Jan	Feb	Mar	Apr	May	June
Selection of final dates for launch meeting, confirmation of Steering Committee and agreement on reporting procedures (including financial reporting requirements).	Chief Plant Protection Officers from relevant NPPOs, and advisors at the CPM in Rome (led by Governance WP)			X			
Contracting between STDF/WTO and CABI SEA. MOUs with all other implementing agencies.	All parties				X	X	X
Final selection of counterparts for case study work in countries, and regional.	NPPOs				X	X	X
Formalising "interested parties" group for communications (e.g. regional development groups, IAGPRA, other RPPOs, etc) that want to be informed of subject and project meetings.	All parties					X	
Selection of software for proposed decision support tool(s).	QUT and ICL (Technical Framework WP)						X

[1] The Administration WP will be in charge of collecting materials for interim and final financial and progress reports to the STDF. The timing of these will be reflected in a more detailed work plan prepared after funding is confirmed.

Activity	Responsibility	Year 1 (2011-2012) Start Date: July 1, 2011											
		July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
Organise launch meeting.	CABI SEA (Communications WP)	X	X										
Preparation and collection of technical input for launch meeting, including best practice for stakeholder engagement and for expert judgement elicitation.	ICL and QUT (Governance and Technical Framework)	X	X										
Launch Meeting: for detailed planning of Case Studies and also providing technical input for increased understanding and knowledge of Systems Approach	All parties to participate in 4 day meeting (exact dates TBD)		X	X									
Final selection of Case Study examples (no changes to regional examples)	NPPOs (Case Studies WP)	X	X										
Obtain or prepare PRA and other supporting materials for the country Case Studies (these draw from active trade concerns and are not "new" to the NPPO work load)	NPPOs (Case Studies WP)	X	X	X	X								
Refine indicators of success of project and gain agreement on milestones.	CABI SEA and ICL (Admin and Governance WPs)	X	X	X									
Regional Case Studies initial collection of materials and contact with private sector groups.	NPPO with CABI SEA and Malaysia NPPO (Case Studies WP)	X	X	X	X	X	X						

Activity	Responsibility	Year 1 (2011-2012) *Continued* Start Date: July 1, 2011											
		July	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**
Procurement of any necessary computers and software.	CABI SEA (Administraion WP)	X	X										
Inform all parties of IP agreements and develop any project branding.	CABI SEA (Administration WP)		X	X									
Manage monthly progress calls and milestones.	CABI SEA (Administration WP)				X	X	X	X	X	X	X	X	X
Establish website for project if required, or other means of sharing documents with entire project.	CABI SEA (Communications WP)				X	X	X						
Prepare report on existing approach to risk management in the region (starting from materials presented in PPG workshop)	Governance WP									X	X	X	X
Establish additional data requirements to move from a PRA to a Control Point – Bayesian Network [initial ideas, then validated in practice]	Technical Framework WP (drawing on discussion at launch)			X	X							X	X
Develop Control Point Bayesian Net for each country Case Study (X) and for regional case studies (Z)	Technical Framework with Case Study WPs					X	X	X	X	X Z	Z	Z	Z

Activity	Responsibility	Year 2 (2012-2013) End Date: June 30, 2013											
		July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
Identify gaps/request additional data for CP-BN for each country case studies.	Technical Framework WP	X	X	X									
Sensitivity Analysis to determine key points of each Case Study, e.g. where more information is helpful.	Technical Framework and Case Studies WPs				X	X							
Review stakeholder engagement in SE Asian subregion and systems for reporting and documentation of practices (private sector and official).	Governance WP (MSc student from ICL)	X	X	X	X								
Revise final Case Study CP-BN and prepare reports on each.	Case Studies WPs and Technical Framework WPs					X	X	X	X				
Analysis of effectiveness of approach to application of Systems Approach.	All Parties, led by ICL.									X			
Organise workshop on results.	CABI SEA (Communications WP)								X	X	X		
Workshop on final results and discussion of trade application.	All parties (3 day meeting)											X	
Validate approach to project, internal evaluation. Preparation of lessons learned report.	Governance WP											X	
Manage monthly progress calls and milestones.	CABI SEA (Administration WP)	X	X	X	X	X	X	X	X				

Activity	Responsibility	Year 2 (2012-2013) *Continued* End Date: June 30, 2013											
		July	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**
Support presentation of results and tool to the CPM, through internal IPPC process	Governance WP										X	X	X
Validate results of project, external evaluation.	External Evaluation Team										X	X	X

APPENDIX 3: Terms of Reference

The Project Manager, an experienced professional already employed by CABI SEA, will provide the ongoing oversight for achieving deadlines, milestones and outcomes in terms of reports. The technical content, however, is a relatively new approach that will be fully supported from outside CABI SEA and, indeed, the subregion.

The Work Package approach clarifies responsibilities of each party in this project. The reality may cause some adjustment to the Case Studies selected, the NPPO counterpart named, or in one case, even the country participating (due to pending approval at Ministerial level and interest of another one). However, separate objectives and activities will allow for appropriate monitoring and discrete adjustments within each WP to ensure progress to the final objective.

At the same time, the nature of this project will rely on each participant carrying out and completing some aspect of the work. To that end, the ethos must be created of mutual accountability, responsibility and honesty to achieve results in the time frame proposed.

The PPG Workshop participants held a strong consensus that learning is through doing. The name of the project arose from this exchange in which sharing of experience and opinions strengthened the original project concept. The aim is to carry on with this level of exchange.

Therefore, all of the CVs of the proposed participants in the project (other than Steering Committee and External Evaluators) are submitted, as follows:

Administration and Communications
- Sivapragasam, Project Manager
- Mei Jean, Sue, Administration support (scientist)
- Various support from IT, meeting planner etc in house

Case Studies*
- Yusof Bin Othman, Malaysian case study and regional case study
- Duong Minh Tu, Vietnamese case study
- Tasanee Pradyabumrung, Thai case study (in conjunction with Ministry of Agriculture)
- Hermawan, Indonesia
- Keng-Yeang Lum, regional case study support (Chief Scientist, CABI)
- Luben Q. Marasigan

* One NPPO will be participating as an Observer for a total of 3 national and 2 regional cases

Technical Framework
- Kerrie Mengersen, QUT (in kind support)
- Peter Whittle, QUT – WP Leader
- John Holt, ICL
- Adrian Leach, ICL

Governance
- John Mumford, ICL (in kind support)
- Jon Knight, ICL – WP Leader
- Megan Quinlan, ICL
- Mike Jeger, ICL

	STDF FUNDING BY WORK PACKAGE	STDF funds	In kind funds	subtotal	details
Technical framework	QUT	USD 77,934	USD 24,315	USD 102,249	PW 50% time yr 1, 15% time yr 2
	ICL	USD 22,765	USD 24,649	USD 47,414	JH and AL, 2 weeks each year
	expenses	USD 800	USD 832	USD 1,632	local travel, software, etc
		USD 101,499	USD 49,796	USD 151,295	
Case studies	NPPOs	USD 33,260	USD 34,590	USD 67,850	See detailed budget by country
	Regional	USD 7,000	USD 7,280	USD 14,280	resource person for SALB
	Regional	USD 12,000	USD 12,480	USD 24,480	resource person for palm oil planting material
	Consultation costs	USD 13,000	USD 14,000	USD 27,000	meeting of case leaders with Tech Framework
	Equipment, etc	USD 4,800	USD 300	USD 5,100	IT costs, incl software
	SEA MSc students (2 students per year, one visit)	USD 5,420	USD 5,637	USD 11,057	costs in Australia
		USD 75,480	USD 74,287	USD 149,767	
Governance	ICL	USD 51,339	USD 57,619	USD 108,958	MQ, JK, MJ
	ICL MSc (one, 2012)	USD 5,000	USD 0	USD 5,000	travel costs in SEA
	expenses	USD 1,243	USD 1,294	USD 2,537	software, communications
		USD 57,582	USD 58,913	USD 116,495	
Communications	CABI organises	USD 38,000	USD 39,520	USD 77,520	launch mtg, concluding workshop
	expenses	USD 2,900	USD 3,016	USD 5,916	materials, editor/design, printing
		USD 40,900	USD 42,536	USD 83,436	
Administration	CABI	USD 8,400	USD 8,736	USD 17,136	Half time administrator level
	Project manager	USD 21,000	USD 21,840	USD 42,840	35% time project manager in CABI
	Steering Committee travel	USD 8,180	USD 8,507	USD 16,687	costs for travel, incidentals
	Review and impact	USD 0	USD 15,000	USD 15,000	external evaluation
	Consumables, communications	USD 800	USD 832	USD 1,632	courier, postage, CDs etc
	contingency	USD 2,800	USD 2,912	USD 5,712	reserve for foreign exchange fluctuation
		USD 41,180	USD 57,827	USD 99,007	
				USD 600,000	TOTAL

Proposed contribution from STDF funds to each Case Study
(personnel only)

Final allocation will be based on Case Study selection

NPPO individual budgets*		YEAR 1	YEAR 2	SUBTOTAL	
Malaysia	2 people - country and regional	USD 18,000	USD 18,720	USD 36,720	
Thailand	1 person	USD 4,860	USD 5,054	USD 9,914	
Vietnam	1 person	USD 5,400	USD 5,616	USD 11,016	
Philippines	1 person	USD 5,000	USD 5,200	USD 10,200	
subtotals		USD 33,260	USD 34,590		**USD 67,850**

*Indonesia budgeted for travel to workshops only

APPENDIX: CURRICULUM VITAE OF PROJECT STAFF

1. ADMINISTRATION WP

A. PROJECT MANAGER

NAME: A. Sivapragasam
NATIONALITY: Malaysian
FULL POSTAL ADDRESS: CABI Southeast & East Asia Regional Centre,
P.O. Box 210, 43400,
UPM Serdang, Selangor, Malaysia
TEL: 603-89432921
FAX: 603-89426490
EMAIL: a.siva@cabi.org or sivasamdr@yahoo.com

LANGUAGES (Competency):

- English: (Excellent oral and written);
- Bahasa Malaysia: (Good oral and written);
- Tamil: (Good oral and written);
- Japanese (Basic conversational and written);
- French (Basic conversational and written)

EDUCATIONAL DETAILS

Institution	Specialization	Degrees /Dates
University of Agriculture, Malaysia	Entomology	B. Sc. (Agric.); 1978
Nagoya University, Japan	Insect Ecology and Toxicology	M.Sc.; 1986
University Malaya, Malaysia	Insect Population Dynamics and Ecology	Ph.D; 1995

EMPLOYMENT AND WORKING EXPERIENCE

i. Employment History - a total of 30+ years in various positions as follows:

Institution	Position
Malaysian Agricultural Research and Development Institute (MARDI), Malaysia	1. Research Officer (Entomology) at the Basic Research Division, MARDI (July 1978 – Oct. 1983) 2. Senior Research Officer, Cocoa/Coconut Research Division, MARDI (April 1986 – Nov. 1989) 3. Senior Research Officer, Strategic, Environment and Natural Resources Center, MARDI (Dec. 1989 – Jan. 2002) 4. Deputy Director/ Senior Principal Research Officer (VK07), Rice and Industrial Crops Center; Head, Pests and Disease Management Program (Feb. 2002 – 21st June 2010- mandatory retirement) 5. Senior Scientist, CABI Southeast and East Asia Regional Center, Malaysia (October 1st - recent)

ii) Administrative Experience (at MARDI)

1. To Strategize, Plan and Execute Research and Development Projects in the Rice and Industrial Crops Center, MARDI (Industrial crops include coconut)
2. To Manage the Research and Development of the Pests and Disease Program in the Rice and Industrial Crops Center, MARDI
3. To Monitor and Coordinate R&D developments in the Coconut, Beverages, Spices and Legume Crops Industry in Malaysia
4. To Provide Direction and Leadership to the program staff to enable them to be relevant service providers
5. To Support and Liaise with the various stakeholders of the Agro-Industry whenever necessary as a member of National Committees such as the Pesticide Board, Organic Steering Committee; SIRIM Standards Committee and National Committee on Coconut Industry Development

iii) Membership in Administrative Committees within Institution (last 2 years)

1. Member, Corporate Strategic Planning Committee, MARDI
2. Member, Development of Key Performance Index Committee, MARDI

3. Member, Think Tank Group for the Recent Developments in the Agriculture Sector
4. Chairman, Cross Functional Team for Research Project Development on Coconuts, Kenaf, Roselle and Tobacco for the Ninth Malaysia Plan
5. Member, Knowledge Management Committee, MARDI
6. Member, Procurement of Special Agriculture R&D Fund Committee, MARDI
7. Coordinator, Coconut Research and Development Program, MARDI

RESEARCH EXPERIENCES AND EXPERTISE

A total of 32 years to date in various aspects of Tropical Pest Management

1. Development of Integrated Pest Management (IPM) programs for pests in various tropical-agro-ecosystems including hydroponics and organic farming systems
2. Utilization of biopesticides (*Bacillus thuringiensis, Metarhizium anisopliae, Azadirachtin indica, A. excelsa*; tea tree oil) against pests
3. Development of biological control systems for pests of vegetables (crucifers), noxious weeds, sugarcane and tobacco
4. Pest management for stored product pests including use of fumigants and irradiation for storage pests
5. Ecology of pests and their natural enemies in horticultural (vegetables and fruits), rice, industrial crops (tobacco, pepper, sugarcane), plantation (cocoa, coconut) and storage systems
6. About eight years of experience with coconuts-based systems particularly with pests such as *Oryctes rhinoceros* and *Rhynchophorus vulneratus*.
7. Currently, involved in a project funded by the Malaysian government towards developing coconut based mixed farming systems in Malaysia
8. Team member, Science Fund project "Assessment on the efficacy of methyl bromide and ethyl formate as fumugants against all life stage of cocoa pest insects during storage. Project number: 05-03-13-SF0049 (Project Leader: Asimah Hamid, Malaysian Cocoa Board)

PARTICIPATION IN MAJOR INTERNATIONAL PROJECTS

Some of the key projects undertaken are as follows:

1. FAO Inter-country Program on integrated pest management in rice
2. ADB-AVRDC (AVNET) project on Collaborative Vegetable Research in Southeast Asia
3. New York Based Group of 77 Perez Guerrero project on Organic farming in rice and vegetables
4. International Agency for Atomic Energy (IAEA) project on the Use of sterile techniques against the diamondback moth in crucifers
5. UNDP-FAO Project on Improved Coconut Production in Asia and Pacific Region
6. ACIAR-CSIRO Regional Projects on Biological Control of Noxious Weeds, viz, water hyacinth and *Mimosa pigra*
7. Center for Agriculture and Biosciences International (CABI) –MARDI Partnership Facility Project on invasive species of insects such as agromyzid leafminers*, Liriomyza* species and *Spodoptera exigua* on vegetables in southeast Asia
8. Project collaboration with the Natural Resources Institute-University of Greenwich Project on "Pheromones for *Hellula undalis*"
9. Coconut Integrated Pest Management (IPM) program. Country Project coordinator. Funded by the Common Fund for Commodities (CFC) and Implemented by FAO of the United Nations and Asian Pacific Coconut Community (APCC), Jakarta, Indonesia.

INTERNATIONAL EXPERIENCE

1. Country Representative, Program on Biocontrol of Pests and Weeds for Sustainable Development, Center for Science and Technology of the Non-Aligned and other Developing Countries (NAM S&T Center), India
2. Member, Expert Working Group Phytosanitary Treatments for International Standard Phytosanitary Measures
3. Member, Expert Working Group on diagnostics for *Thrips palmae* for International Standard Phytosanitary Measures
4. Co-Chairman Working Group on *Plutella* Biocontrol, International Organization on Biological control
5. Participated in the Final Project Meeting, Common Fund for Commodities (CFC) Funded Project: Coconut Germplasm Utilization and Conservation to Promote Sustainable Coconut Production. 17 –20 November, 2004. Grand Maya Hotel, Kuala Lumpur, Malaysia. Organized by IPGRI-COGENT and CFC.
6. Member of Malaysian Delegation to the 40th COCOTECH Meeting and Coconut Festival 2003. 1-5 July, 2003, Colombo, Sri Lanka.
7. Member of the Malaysian Delegation to the 40th Asian and Pacific Coconut Community Session, 2-5 December, 2003. Kuala Lumpur, Malaysia.
8. Member of Malaysian Delegation to the 42nd Asian and Pacific Coconut Community (APCC) Session in Marshall Islands, 15-18 November, 2005.
9. Member of Malaysian Delegation to the ASEAN -SSOM Meeting in Bohol , Philippines, 30 August – 2nd September, 2006.
10. Member of Malaysian Delegation to the 42nd COCOTECH Meeting and Coconut Festival 2006. 24-28th August, 2006, Manila, Philippines.

11. Member of Malaysian Delegation to the 43rd Asian and Pacific Coconut Community (APCC) Session in Papua New Guinea, 7-12 November, 2006.
12. Resource person, Asian and Pacific Coconut Community/FAO-RAP/APPPC Consultative Meeting on the IPM of *Brontispa longissima*, 27-28 February 2007, Bangkok, Thailand. Presented paper entitled "A. Sivapragasam (2007). *Brontispa longissima* – its status and management in Malaysia. Paper presented at the Asian and Pacific Coconut Community/FAO-RAP/APPPC Consultative Meeting on the IPM of *Brontispa longissima*, 27-28 February 2007, Bangkok, Thailand.
13. Country Coordinator, CFC/DIFD/APCC/FAO project on Coconut Integrated Pest Management, 2-5 May 2007, Kochi, India

CONSULTATIONS AND EVALUATIONS

1. Consultant to the International Funding for Agricultural Development (IFAD) to evaluate project implementation for a Project on "*Biological control of the Red palm Weevil and other pests of date palms in the Gulf States*" (12-22 April, 2002)
2. Consultant to FAO of the United Nations from Sept. 11to October 6, 2003 to undertake an Independent Technical Assessment of an Integrated Pest management Project on Red Palm Weevil in Qatar
3. Resource Person at the Asian and Pacific Coconut Community/FAO-RAP/APPPC Consultative Meeting on the IPM of *Brontispa longissima*, 27-28 February 2007, Bangkok, Thailand. Coordinated in developing the Research gaps for Regional Project Formulation for *Brontispa longissima*.
4. Project Evaluator for ACIAR project entitled " *Managing CPB in PNG through improved risk incursion management capabilities, IPM strategies and stakeholder participatory training"* (Project No. CP/2006/114)

J: PUBLICATIONS

More than 30 peer-reviewed publication and 70 non-technical publications:

B. ADMINISTRATIVE SUPPORT PERSONNEL

NAME:	Mei Jean, Sue
PROFESSION:	Biotechnologist
NATIONALITY:	Malaysian
YEARS' EXPERIENCE	3
DISCIPLINES:	Plant Tissue Culture Microbial taxonomy, identification and diagnostics

KEY QUALIFICATIONS:

- Technical expertise in Animal Cell Culture, Plant Tissue Culture, Protein Separation using SDS-PAGE, Microbial Diversity as well as Microbial Identification and Characterization

EDUCATION:

Monash University Malaysia	2006	BSc Hons (Biotechnology)
Monash University Malaysia	2005	BSc (Biotechnology)

EMPLOYMENT RECORD:

CABI Malaysia
2008 - present

Scientist

- Provide support in proposal write up through thorough literature search and the drafting of project proposals (MAFC consultancy on the management of papaya diseases and ASEAN Forest Clearing House Mechanism (CHM))
- Support laboratory activities involving sample collection, conducting lab experiments and providing lab training

Monash University Malaysia
2007-2008

Research Assistant

- Characterization of the molecular mechanisms involved in the activation of caspase-1 through the inhibition of isoprenoid biosynthesis in monocytes

Monash University Malaysia
2006-2007

Lab Demonstrator

- Assist lecturer and lab technician in providing a safe working and learning environment for 'Biology' and 'Crop science'.

RELEVANT WORK EXPERIENCE:

- Project assistant, Towards Improved Market Access for ASEAN Agricultural Commodities, 2009 - present

LANGUAGES, 1 (POOR) TO 5 (VERY GOOD):

Language	Reading	Speaking	Writing
Bahasa Malaysia	5	5	5
English	5	5	5
Chinese	1	3	1

2. CASE STUDIES WP

A. MALAYSIA

Full name	Yusof Bin Othman
Academic background	B Sc Agriculture, Agriculture University of Malaysia
	M Sc Zoology, National University of Singapore
Position	Deputy Director
Full postal address	Crop Protection and Plant Quarantine Division
	Department of Agriculture
	Jalan Gallagher
	50480 Kuala Lumpur, Malaysia
Email	yusofothman@doa.gov.my or yusofothman@gmail.com
Telephone	+603 26977180
Fax	+603 26977205

Work experiences

Current work (June 2007 until Now)

- Head of the Expert Services and Diagnostic Section.
- Responsible for the diagnostic services through out Peninsular Malaysia for insects, diseases, weeds, nematodes and vertebrate pests.
- Provide technical documents for market access, prepare and review pest lists of export commodities, head the pest risk analysis team for import of new agriculture goods and implement export protocol/ procedures such as systems approach, vapour heat treatment, hot water treatment, fumigation, irradiation etc.
- Provide expert advice on the management of pests and diseases to stakeholders and owner of farms especially farm that had been register to export their produces.

April 2006 – June 2007

- Chief of enforcement section in the plant quarantine division.
- Responsible in managing inspection at 52 entry points.
- Review and update the procedures on inspection and release of consignments of imported agriculture goods and regulated articles.
- Conduct facilities inspection at entry points and upgrade their facilities such as inspection kits and laboratory equipments.
- Collaborate with customs, immigration and port authority to streamline inspection at entry points and facilitate movement of agriculture goods and regulated articles.
- Publish the standard operating procedure for the management of endemic and exotic pests of Malaysia and endorsed by the National Pest Management Committee.

Jan 2006 – April 2006

- Work in the development and technology transfer unit.
- Responsible in packaging pest control technologies for easy implementation at field level and planning for transfer of technologies to stakeholders.
- Initiate the research on the use of remote sensing in detection of pests population on rice with the Malaysia Remote Sensing Agency (MACRES) and development of prediction modeling of Brown Plant hopper using DYMEX

July 1982 – Jan 2006

- worked in Entomology Section, Crop Protection and Plant Qurantine Division, Department of Agriculture, Kuala Lumpur.
- Responsible in planning and monitoring the implementation of Integrated Pest Management (IPM) on Rice & Vegetables.
- Additional duty as secretary to the National Store Products Pest Management Committee that is responsible for the monitoring of khapra beetle infestation and eradication program.
- Secretary to the National Committee on the implementation of IPM in vegetables.

- Trainer and adviser for several government agencies and private sectors on the control of stored product pests and IPM for fruits and vegetables.

March 1981 – June 1982

- Work as Agriculture Officer in Terengganu, Malaysia
- Responsible in developing surveillance system on rice.

Selected Scientific Paper

1. Biochemical studies of non-specific esterases in insecticide resistance in *Sitophilus zeamais* Motch. Asian Journal of Tropical Biology 1:22-25.
2. A survey of insecticide resistance in *S. zeamais* Motsch. in Malaysia and Singapore, J. Plant Prot. Trop. 9:219-225.
3. Integrated Pest Management Package of Crucifer in Malaysia. Proceeding of AVNET I - Final Workshop Bogor, Indonesia
4. Fruit fly population fluctuation in Guava and Cempeden, Poster at first International Symposium on Fruit flies in the Tropics, 1988
5. Biological Control in Malaysia. Presented in Asia Pacific Biological Control Conference, UPM 1996.
6. Diamondback Moth in Malaysia, In Training manual on Integrated Pest Management of Diamondback Moth. (Jusoh Mamat, Loke W.H, Syed A.R. and Mac Tyre eds).
7. Strategies and prospects of fruit fly management towards 2020, In Proceeding Problems and Management of Tropical Fruit flies (T.H.Chua dan Koo, S.G. eds) 1-7.
8. Status and future of Integrated Pest Management in Malaysia. Paper presented in Asia Pacific Integrated Pest Management Conference, Ming Court, KL.
9. Pest of vegetables and their control - Department Prospective. Paper presented at the Department of Agriculture Directors Meeting.
10. Strategy and Outbreak control operation for effective implementation - Paper presented at the Department of Agriculture Technical Meeting.
11. Plant Doctor Guide Book - Diagnostic technique to identify pests of fruits.
12. Pests of Store Product and IPM management techniques - Paper Presented at the BERNAS Training Course
13. The function of Trap for the reduction insect pest in vegetables Cultivation - Paper Presented at the Department of Agriculture Saturday Seminar.
14. Management of Hot Chili Pepper pests - Concept and Implementation - Paper presented at the Department Saturday Seminar.
15. IPM CD on rice, A diagnostic tool for identification and control recommendation - publish by Queensland University Australia
16. Transfer of DBM IPM technology and adoption by cabbage farmers in Malaysia. Paper presented at AVNET II final workshop Bangkok, Thailand.
17. Tetranychidae (Acari: Prostigmata) of Malay Peninsula: Checklist, key to genera and species and description of three new species Journal of Systematic Applied Acrology 2004
18. Discovery of Tenuipalponychus (Acari:tetranychidae) in Malaysia and description of a new species - Zootaxa 2004

B. VIETNAM

1. Name and family name: Duong Minh Tu

2. Place of birth: Hung Yen province

3. Working organisation and position: Director of Plant Quarantine Diagnostic Centre (PQDC), Plant Protection Department (PPD), Ministry Of Agriculture & Rural Development (MARD)

4. Address of organisation: 149, Ho Dac Di, Dong Da, Hanoi, Vietnam

5. Tel/Fax: (84) 4 3851 3746

6. Email: thanhtam1992@yahoo.com or pqdc_ppd@yahoo.com.vn

7. Education: BSc.; MSc. and PhD. in Agriculture
Graduated from Hanoi Agricultural University in 1984,
Master of Science in 1997
Ph. D. in 2005 in agriculture (Entomologist)

8. Experience: 2001 and 2006: Director of PQDC, PPD, and MARD
1996: Deputy Director of PQDC, PPD, MARD.
1995: Deputy Head of Plant Quarantine Division of PPD, MARD
26 years of experience: Senior in Plant Quarantine

9. English: 1998-1999: Learning English at Hanoi Foreign Language (C Level)

10. Publications

- Tu Duong Minh and Viet Hong Dinh Thi (2001), *Invasive Alien Species in Vietnam*, Asia and pacific region workshop on invasive alien species, Bangkok, Thailand.
- Tu Duong Minh, Huong Ha Thanh et al. (2003), "Survey report of stored insect pests of Vietnam in 2001-2002", *Proceeding of the Scientific Meeting of the ACIAR project PHT 1998/137*, April 08-09 2003, Hanoi, Vietnam, pp. 15-25.
- Tu Duong Minh, Nhung Bui Thi Tuyet, Huong Ha Thanh et al. (2003), "Detection of Phosphine resistance of some major stored product insect pests in Vietnam", *Proceeding of the Scientific Meeting of the ACIAR project PHT 1998/137*, April 08-09 2003, Hanoi,Vietnam, pp. 7-14.
- Tu Duong Minh (2003), "The situation of Phosphine fumigation use in Vietnam", *Constraints and solutions to the use of phosphine as an alternative to Methyl bromide in durable commodities*, Asia and Pacific Regional Workshop, September 29 to October 2/2003, Ho Chi Minh City, Vietnam.
- Nhung Bui Thi Tuyet, Tu Duong Minh et al. (2004), "Grain protectants and Phosphine resistance of some major stored insect pests in Vietnam", *Proc. Int. Conf. Controlled atmosphere and fumigation in stored products*, August 8-13 2004, Gold coast, Queensland, Australia.
- Various other publications in Vietnamese journals

C. THAILAND

1. Personal Information

Full name:	Ms. Tasanee Pradyabumrung
Nationality:	Thai
Office address:	Office of Commodity and System Standards, National Bureau of Agricultural Commodity and Food Standards (ACFS), Ministry of Agriculture and Cooperatives 50 Pahonyotin Rd. Ladyo Chatuchak, Bangkok, THAILAND 10900
Tel.	662 5612277 #1452
Fax	662 5613357
E-mail:	tasanee@acfs.go.th

2. Education: BSc. (Horticulture) in 1979
Kasetsart University, Bangkok, THAILAND

3. Present position: Head of Phytosanitary Standards section
Office of Commodity and System Standards,
National Bureau of Agricultural Commodity and
Food Standards (ACFS)

4. Work Experiences:

Since 2003 until now:

- Head of Phytosanitary Standards section in Office of Commodity and System Standard, ACFS

Responsible:

- IPP editor
- Secretary of Phytosanitary sub-committee under Agricultural Standards Committee: Developing strategic direction to improve collaboration among the organization concerned in Thailand for effective implementation on ISPMs and IPPC issues eg.,
    - *proceeding network of plant protection,*
    - *establishing pest list database*
    - *establishing roster of experts*
- Secretary of Technical Committee of Agricultural Standards Committee: Elaborating of Thai Agricultural Standards on phytosanitary measures harmonize with ISPMs eg.,
    - *Export requirements for wood packaging materials (2004),*
    - *Guidelines for surveillance (2005),*
    - *Guidelines for use of irradiation measure in exportation of fruit to USA (2007)*

- *Diagnostic protocols for Pantoea stewartii* subsp. *stewartii (2008)*
- *Phytosanitary measures for wood packaging materials in international trade (proceeding in 2010)*

- Coordination and participation in the elaboration of comment on draft ISPMs and related issues under IPPC

1980-2003:

- Agricultural Scientist in Agricultural Regulatory Office, Department of Agriculture

Responsible:

- worked in seed regulatory section, CITES plants regulatory section, plant varieties protection section
- collecting data, planning and monitoring the implementation of the Notification of Agriculture: Controlled Seed Permit, CITES Permit
- Undersecretary of New Variety Registration sub-committee under Plant variety protection Committee

5. IPPC Experiences:

5.1 Training on :

- International Phytosanitary Portal (IPP) 1st Training Workshop for the Asia Region, Kuala Lumpur, Malaysia, 3 – 6 May 2005
- Phytosanitary Principle For Plant Quarantine Officer (Thailand, 2006) by Department of Agriculture, Government of Western Australia
- Plant Pest Risk Analysis Workshop (Thailand, 2005) by APHIS/USDA
- Irradiation as Phytosanitary Treatment for Fresh Fruits and Vegetables Workshop (Thailand, 2006) by IAEA
- Pest Risk Assessment (USA, 2008) by Cochran Fellowship Program/USDA
- Pest Risk Analysis (GCP/RAS/226/JPN), Bangkok 9-20 March 2009
- Phytosanitary inspection and phytosanitary certification, Bangkok 27-31 July 2009

5.2 IPPC meeting

- Representative of Thailand in Interim Commission on Phytosanitary Measures (ICPM) 6th, 7th session and Commission on Phytosanitary Measures (CPM) 2, 3, 4, 5 session. Rome, Italy
- Open Ended Working Group to Undertake a Feasibility Study on the International Recognition of Pest Free Areas. Chiang Mai, Thailand 14-18 July 2008

5.3 APPPC meeting

- Liaison on organizing the 24th Session of the Asia and Pacific Plant Protection Commission (APPPC) Bangkok Thailand, 5-9 September 2005

- Representative of Thailand participating in 25th Session of the Asia and Pacific Plant Protection Commission (APPPC), Beijing China, 27-31 August 2007
- Representative of Thailand participating in 26th Session of the Asia and Pacific Plant Protection Commission (APPPC) New Delhi, India, 31 August – 4 September, 2009
- Representative of Thailand participating in 9th Regional Workshop for Review of Draft International Standards for Phytosanitary Measures (ISPMs) Republic of Korea, 28 July-1 August 2008
- Representative of Thailand participating in 10th Regional Workshop for Review of Draft International Standards for Phytosanitary Measures (ISPMs) Republic of Korea, 14 -18 September 2009
- APPPC Workshop on the Pest Incursion and Eradication Republic of Korea 30 August-3 September 2010

5.4 Coordinator

- Independent Evaluation of the Workings of the International Plant Protection Convention and its Institutional Arrangements 3-8 November 2006, Thailand
- Cooperation for the improvement of phytosanitary capacity in Asian countries through capacity building (GCP/RAS/226/JPN) Program for reviewing phytosanitary capacity of Thailand 12-17 November 2007
- GCP/RAS/226/JPN The Regional Workshop: on “Pest Risk Analysis” Rama Gardens Hotel, Bangkok 9-20 March 2009
- GCP/RAS/226/JPN The Regional workshop: “Phytosanitary inspection and phytosanitary certification” Century Hotel, Bangkok 27-31 July 2009

D. INDONESIA

I. Personal Information

Name	:	HERMAWAN
Nationality	:	Indonesia
Office Address	:	Indonesian Agricultural Quarantine Agency, Ministry of Agriculture, Jalan Harsono RM. No.3. Gedung E, Lantai 5, Pasar Minggu, Jakarta Selatan.
Tel	:	(021) 7816482 (office), +6281316766658 (mobile phone)
Fax	:	(021) 7816482
e-mail	:	hermawan@deptan.go.id

II. Education

Institution	Year	Degree(s)/ Diploma(s) obtained
1. University of the Palembang, Indonesia	1994-1998	Diploma in Plant Pest and Disease
2. University of the Philippines, Los Banos, Philippine	2001-2003	Master of Science in Entomology

III. Language Skill

Language	Reading	Speaking	Writing
English	2	2	2

IV. Present Position: Head of sub Division of Technique and Method Development for Plant Quarantine, Agency of Agricultural Quarantine of Indonesia

V. Professional Experiences:

Name of institution	Position	Year	Job description
Indonesian Agricultural Quarantine Agency, Jakarta	Head of PQ technique and method development Sub Division	June 2008-at present	• PQ technique and method development
Center of Agricultural Quarantine Laboratory	Head of Programme, Information and Documentation Sub Division	2007-June 2008	• Planning • Development of AQ Laboratory database • Publication
Teluk Bayur Plant	Head of Information	2005-2006	• Development of PQ

Quarantine Service, Padang	and Documentation Section		database • Publication • Operational report
Boom Baru Plant Quarantine Service, Palembang	Laboratory staff	1994-2005	▪ Identification of plant pests and diseases associated with plant or plants products
Tanjung Pandan Plant Quarantine Station, Biliton	Plant Quarantine Inspector	1987-1994	▪ Inspection of plants and plant products as PQ concerned
Jakarta Plant Quarantine Service, Jakarta	Laboratory staff	1986-1987	▪ Identification of plant pests and diseases associated with plant or plants products
Bogor Plant Quarantine Station, Bogor	Plant Quarantine Inspector	1984-1986	▪ Inspection of plants and plant products as PQ concerned

Regional Workshop

Name of workshop	Year	Country (Host)
Asia Pacific Regional Workshop on Pest Risk Analysis of SALB	2005	Kuala Lumpur, Malaysia
The 25th Regional Meeting of APPPC and Workshop in regard of Plant Protection and Quarantine	2007	Beijing, China
Seminar and workshop on SPS (European Union's Regulation) for the ASIAN Countries	2008	Brussel, Belgium
Regional workshop on Pest Risk Analysis (Indonesia and Malaysia)	2008	Jakarta, Indonesia
Regional workshop on pest eradication and draft ISPM	2010	Rep. of Korea

E. CABI

NAME: LUM, Keng-Yeang

NATIONALITY: Malaysian

Current Position

- Chief Scientist, CABI Southeast & East Asia

Educational Background

- B. Agric. Sc. (Hons) - University of Adelaide, South Australia
- M. Agric. Sc. – University of Malaya, Kuala Lumpur
- Ph.D. (Plant Pathology) – University of Wisconsin-Madison, USA

Work Experience

- 1971 - 1994 Research Officer, Malaysian Agricultural Research & Development Institute (MARDI)
- 1995 – 2002 Head of Pest Science Program, MARDI
- 2003 – present Chief Scientist, CABI SEA

Principal Areas of Expertise

- Plant Pathology (Phytobacteriology)
- Microbial identification and diagnostics, microbial ecology and biodiversity
- Plant health & phytosanitary issues
- Consultancies, Project Development, Management & Evaluation

Relevant Work Experience

- Project Manager, Consultancy for Brunei Govt on the Establishment of Plant and Animal Quarantine Services and facilities in Brunei Darussalam 2011 - 2013
- Project Manager, Consultancy for Brunei Govt on Development of Bacterial and Fungal Disease Identification and Management on Agricultural Crops and Ornamentals 2011 - 2014
- Project Leader, IDRC Project “Towards Improved Market Access for ASEAN Agricultural Commodities” 2009 -2011
- Member, FAO Working Group on the Guide to Implementation of Phytosanitary Standards in Forestry 2009 - 2010
- Phytosanitary Consultant, ADB Project on Sanitary & Phytosanitary Action Plan for the Greater Mekong Sub-region 2009 (RETA 6450)
- Phytosanitary Consultant, ADB Project on CIQS Harmonization in BIMP-EAGA 2009 (RETA 6048)
- Member, Technical Panel on Diagnostic Protocols, International Plant Protection Convention (IPPC) (until 2009)
- Chair, ASEANET, the SE Asian LOOP of BioNET INTERNATIONAL
- Project Leader, IDRC Project “Knowledge Networks & Systems of Innovation to Support Implementation of Sanitary and Phytosanitary Standards in the Developing Countries of South East Asia, 2007-2008
- Resource Person, AusAID Sanitary & Phytosanitary Capacity Building Program 2005-2008 in a) Identification and Collection Management for Plant Pathogens, b) Pest Risk Analysis, c) Awareness on WTO/SPS issues

- Resource Person, APEC Workshops on a) Building Biosecurity Planning and Surveillance Capacity in APEC Member Economies, 2005, b) Understanding and Developing Risk Management Options for Market Access, 2008, c) Food Security through A Regional Approach and Wide Stakeholder Participation in Plant Biosecurity, etc
- Resource person, ICCO Workshop on the Prevention and Management of the Global Spread of Cocoa Pests and Diseases, Abdijan, Cote d'Ivoire 2007
- Consultant, AusAID Public Sector Linkages Program for the Philippines – Building National Pest Lists to underpin Agricultural Exports 2006
- Project Manager, Consultancy for Brunei Govt on Development of Capacity in Viral Disease Identification and Management on Agricultural Crops and Ornamentals in Brunei 2004 – 2005
- Technical Expert, Design Mission for the ASEAN-Australian Development Cooperation Program (AADCP) Plant Health Component, 2004
- Led Malaysian initiative to establish the ASEAN Plant Health Cooperation Network (APHCN), 2003 and ASEAN Regional Diagnostic Network (ARDN).
- Resource person, Thai-Australia Government Sector Linkages Program Workshop on Preservation of Disease Specimens in the Tropics, 2003
- Consultant, AusAID-funded project on "Needs Assessment in Taxonomy and Biosystematics for Plant Pathogenic Organisms in Countries of South East Asia", 2001-2002

Publications	Over 80 scientific publications on plant pathogenic bacteria, microbial diversity, pesticides in the environment & bioremediation, and plant health & SPS issues
Membership of Professional Bodies	Past-President (1991-93) and Life Member, Malaysian Plant Protection Society (MAPPS)

F. PHILIPPINES

PERSONAL

Name	:	**LUBEN Q. MARASIGAN**
Permanent Address	:	Teomora Village, Phase 3, Madrid St. Barangay San Gabriel, San Pablo City, Laguna
Tel. No.	:	(049) 562-96-24
Cell No.	:	0924-492-1759
E-mail	:	lobs_marasigan@yahoo.com
Office Address	:	Plant Quarantine Service Ninoy Aquino's International Airport Pasay City, Metro Manila
Tel. No	:	(049) 832-2982

EDUCATIONAL ATTAINMENT

College	:	**University of the Philippines at Los Baños** College, Laguna
Course		Bachelor of Science in Agriculture
Major		Plant Pathology (1979)
Graduate Studies	:	**Master of Science** (20 units) University of the Philippines at Los Baños College, Laguna 1982-1984
Major	:	**Plant Pathology**
Minor	:	**Entomology**
	:	**Master in Public Administration** Philippine College of Health and Science Manila 1998-2000 (31 units)

ELIGIBILITIES

Career Service Professional	- 1980 Passed
Career Service Sub-Professional	- 1976 Passed
Professional Agriculturist	- Philippine Regulatory Commission (Regular Member)

EMPLOYMENT HISTORY

Officer-In-Charge 2007 – Present
Plant Quarantine Service
Ninoy Aquino's International Airport
Bureau of Plant Industry, Department of Agriculture
Pasay City

Supervising Agriculturist 2002 – 2006
Plant Quarantine Service
Bureau of Plant Industry, Department of Agriculture
Malate, Manila

Agricultural Center Chief III 1995 – 2002
Department of Agriculture, Region IV
Diliman, Quezon City

Senior Agriculturist (Permanent) 1989 – 1995
Department of Agriculture, Region IV
Diliman, Quezon City

Senior Plant Pathologist (Contractual) 1984 – 1988
Bureau of Plant Industry, Department of Agriculture
Malate, Manila

Senior Research Assistant (Contractual) 1983 – 1979
National Research Council of the Philippines
UP at Los Baños
College, Laguna

SKILLS:

1. Implement Quarantine Law, Rules and Regulations in the Philippines

2. Diagnose and Identify plant pest/disease attacking economic crops and recommend treatments to control/minimize spread of the diseases;
3. Inspect incoming and outgoing plant commodities against harbor plant pests/diseases and comply with the phytosanitary requirement of the importing countries;
4. Supervise and coordinate research work on the nature cause and control of plant pests;
5. Excellent background in laboratory works and field crop analysis
6. Excellent background evaluating reports using statistical analysis and write progress reports;
7. Excellent background in the budget preparation;
8. Excellent background in conducting trainings with emphasis in General Plant Quarantine.

TRAININGS/CONFERENCES/SEMINARS/WORKSHOPS/MEETINGS ATTENDED

International

1. BIMP-EAGA Strategic Planning Workshop, Kota Kinabalu, Malaysia on January 11-14, 2011
2. Workshop on Phytosanitary Risk Management: Strategic and Operational Options for Market Access, Kuala Lumpur Malaysia, November 28-30, 2010
3. 16th Meeting of the ASEAN Working Group on Crop, Renaissance Hotel, Makati, Philippines, May 20-22, 2009;
4. Sanitary and Phytosanitary (SPS) Awareness Workshop and Training Workshop on Plant Disease Specimen Preservation, Creation and Data Management. Sponsored by Bio-Net Aseanet, LIPI and AusAid, August 4-11, 2008, Lipi, Cibinong, Indonesia;
5. Irradiation for Sanitary and Phytosanitary Purpose Bangkok, Thailand, October 11, 2004;
6. National Pest and Disease Collection in the Philippines to Underpin Agricultural Export, Sponsored by Bureau of Plant Industry (BPI), NCPC and AusAid, Los Baños, Laguna, September 1-2, 2004
7. Regional Workshop on Public Participation and Awareness for GM Crops. The Pearl Manila Hotel. Sponsored by FAO and Bureau of Plant Industry, Department of Agriculture, June 21-25, 2004.
8. Workshop on Rice Seed Health Testing Policy for Safe and Efficient Germplasm Movement. IRRI, Loss Baños, Laguna, Philippines, November 5-7, 2003
9. Risk Assessment Training for Biotechnology Regulation for the Philippines, USDA-APHIS, Riverdale Maryland, USA. April 28 – May 3, 2003
10. Workshop on International Fruit Fly, Hanoi Vietnam, March 11-15, 2003
11. Harmonization of Phytosanitary in Seeds. Bangkok, Thailand, February 21-23, 2003
12. Pest Risk Assessment of Kinnow (Orange) Fruits in Pakistan, Sargodha, Pakistan, January 21-25, 2003
13. The 7th International Symposium in Biosafety of Genetic Modified Organism, Beijing, China, October 10-16, 2002
14. Training on International Plant Quarantine, University of Guam, June 16-21, 2002
15. 4th Interim Commission on Phytosanitary Measures, Rome, Italy, March 11-15, 2002
16. The Phytosanitary Risk Analysis Workshop Australia, Cairns, June 15-19, 1999
17. Interception and Identification of Plant Quarantine Pests in Seed Consignments, Selangor, Malaysia, September 3 – October 5, 1990
18. Meeting on the Movement of Nematodes in Plant Materials, Cipanes, Indonesia, September 29 – October 4, 1986
19. Training for Trainors, Serdang, Selangor, Malaysia, August 1-31, 1985

Local

1. PMCP 41st Anniversary and Annual Scientific Conference. Waterfront, Lanang, Davao City, March 9-12, 2010;
2. MIAA ISA-QMS Quality Planning Workshop Aquatic Resort Beach and Hotel, Laiya, Batangas, September 21-23, 2009
3. PMCP at 40; Facing the Challenges of a Changing Environment. Annual Scientific Conference. Baguio City, May 5-8, 2009
4. Inter-Agency ISO-QMS: Systems and Procedures Improvement Division Meeting. NAIA Boardroom, November 14, 2008
5. 4th National Banana Congress. Grand Meng Seng Hotel, Davao City, April 24-26, 2008.
6. 5th National Vegetable Industry Council. Taal Vista Lodge Hotel, Tagaytay City, Cavite, March 7-9, 2007
7. ISO: 9001:2000 Progress-Based approach to Documentation. Ternate, Cavite, November 29-30, 2007;
8. Plant Quarantine Trading Course (Resource Speaker). Bajada, Davao City. November 19-23, 2007
9. Analysis and Advocacy of Policy Options to Enhance Development of the Philippine Small hold Banana Sub-industry – Banana Policy Forum. Sponsored by Philippine Council for Agriculture, Forestry and Natural Resources Research and Development (PCARRD), Villa Caridad, Maddela, Quirino, June 28-29, 2006
10. Pesticide Safety Seminar. Sponsored by BPI-FPA, Department of Agriculture, in Atimonan, Quezon, De Grande Beach Resort, June 24, 2005
11. Plant Quarantine Workshop; Plant Quarantine Regulations and Issues. BPI-DA, Cagayan de Oro City, June 18-19, 2005
12. Pesticide Safety Seminar. General Santos City Sponsored by BPI-Pesticide and Fertilizer Authority, Department of Agriculture. August 17-19, 2005
13. Pesticide Safety Seminar in Port of Cebu. Sponsored by Bureau of Plant Industry (BPI)-Fertilizer and Pesticide Authority (FPA), Department of Agriculture, June 8-9, 2005

14. Technical Working Group on Streamlining of Plant Quarantine. Cebu City, Cebu, March 2-3, 2005
15. National Workshop on Risk Assessment and Management of Genetically Modified Organism. Aloha Hotel, Manila, May 24-28, 2004
16. PCA-BPI Cadang-Cadang Seminar Workshop. Albay Research Center Banao, Guinobatan, Albay, October 25-27, 2004
17. Management Orientation and Understanding the ISO 9001-2000 Elements. Bureau of Plant Industry, Department of Agriculture, April 4, 2003;
18. Seminar/Workshop on Work and Financial Plan BFAR, Los Baños, Laguna, March 1-6, 1998
19. Current Trends and Concept in Plant Quarantine. UP at Los Baños, College of Laguna, April 6-11, 1987
20. Seminar/Workshop in Determination of Training Needs. Bureau of Agricultural Extension (BAEX), Diliman, Quezon City, March 1986
21. First Nematology Training Course (Instructor) UPLB-NCPC, November 10-20, 1983
22. 12th Annual Conference of Plant Pest Control Council of the Philippines. UP at Los Baños College, Laguna, May 13-16, 1981

AWARDS

1. **HONOR AWARD**, Bureau of Plant Industry

"For tangible contribution in protecting our Mango Industry by apprehending and confiscating 275 kgs of Mangoes from Thailand which were found to be infested with Mango Seed Weevil."

AIM Conference Center, Baguio City, July 8, 2008
(Sgd.) Joel s. Rudinas, CESO IV
Director, BPI

2. **RECOGNITION AWARD**. Bureau of Plant Industry, 75th Anniversary of the Bureau of Plant Industry, Manila, June 18, 2005

"In grateful recognition of his remarkable dedication of Chief of the BPI-Plant Quarantine Service (PQS) for initiating the upgrading and rehabilitation of all its facilities and the Plant Quarantine Buildings thus making available efficiently and effectively the delivery of services to our clientele"

(Sgd:) Dr. Clarito M. Barron, CESO IV
OIC Director, BPI

3. **OUTSTANDING CAREER EXECUTIVE**. Philippine Experimental and Education Research Society, Inc. (PHILEXERS), Bayview Park Hotel Ermita Manila, September 11, 2005

4. **BEST STUDENT.** Training on International Plant Quarantine, June 16-21, 2002. University of Guam, Agana, Guam

5. **SPECIAL GROUP AWARD**, Plant Quarantine Service, 79th and 80th BPI Anniversary, January 27-29, 2010 (two consecutive years)

MEMBERSHIPS/ASSOCIATIONS/SOCIETY

1. Alpha phi omega international fraternity	Theta Chapter, U.P. at Los Baños, College, Laguna
2. Knight of Columbus	San Gabriel Parish Church, San Pablo City
3. Ecumenical Communion for Holy Eucharist	San Gabriel Parish Church, San Pablo City
4. Phytopathological Society	U.P. at Los Baños, College, Laguna
5. Mycological Society of the Philippines	U.P. at Los Baños, College, Laguna
6. Pest Management Council of the Philippines	Board of Director, U.P. at Los Baños College, Laguna
7. University of the Philippine Alumni Association	Manila Chapter, Regular Member
8. Philippine Agriculturist Association	U.P. at Los Baños, College, Laguna

RESEARCH STUDIES

Publication

- Marasigan, L.Q., Dela Cruz, A.D., and Castillo, M.D., 1995; Control of ***Rotylenchulus reniformis*** on Cotton (*Gossipium, hirsutum*) through organic manuring, muching and intercropping, Philippine Phytopathols, Vol. 30:35-43.
- Davide, R.G. and Marasigan, L.Q., 1992; Studies on Nematodes affecting Banana; Yield Loss Assessment and Evaluation of Resistance of Banana Cultivars to Nematodes, *Radopholus similis* and *Meloidogyne incognita*,. pp. 73-93.

Unpublished

- Montevirgin, L.M., Cayanan, R.M., and Marasigan, L.Q.; Delimiting and Monitoring of Mango Pulp Weevil (*Sternochetus frigidus* Fab.) in Puerto Princesa City, Palawan, Bureau of Plant Industry. Plant Quarantine Service Report. CY 2002-2008.

3. TECHNICAL FRAMEWORK WP

KERRIE MENGERSEN

Qualifications

- Bachelor of Arts (Honours 1st class), University of New England, 1985
- PhD in Statistics, University of New England, 1989

Employment History

- Commercial statistical consultant, Siromath Pty Ltd, 1987-1989
- Assistant Professor in Statistics, Bond University, 1989-1990
- Lecturer/Senior Lecturer in Statistics, Central Queensland University, 1990-1992
- Visiting Associate Professor in Statistics, Colorado State University, USA, 1993
- Lecturer/Senior Lecturer in Statistics, QUT, 1993-2000
- Professor and Head of Discipline in Statistics, University of Newcastle, 2001-2004
- Research Professor, QUT, 2004-
- Director of Faculty of Science Research Centre, Associate Dean of Research 2005-2007.

Awards and Prizes

- QUT Vice-Chancellor's Awards for Research Excellence (Individual and Team) 2009
- CRC National Plant Biosecurity Award for Research Translation to Industry (Team) 2009
- QUT Faculty of Science award for outstanding research, 2007
- Tweedie Medal, ISBA MCMCSki Conference, 2008

Professional Service

- Elected Fellow of Institute of Mathematical Sciences 2005 and Royal Statistical Society 2004
- Executive Member of the International Society for Bayesian Analysis 2005-2008 and Statistical Society of Australia 2004-2009
- Inaugural President of the Australasian Chapter of ISBA 2004-2009
- Member of the International Biometrics Society and International Environmetrics Society.
- Managing Editor for the *Australian and New Zealand Journal of Statistics* (2005-2009)
- Past member of the Advisory Panel for the *Journal of Bayesian Analysis*
- Past Associate Editor for *Biometrics*
- Programme Chair for 2 ISBA World Meetings and 5 Annual ASBA Workshops 2004-2010
- Programme Committee for 6 national/international conferences 2002-2010
- Board member of the Wesley Research Institute 1998 to 2000, 2005-

Consultancy and Short Courses

- Experience as fulltime consultant statistician with Siromath Pty Ltd (1986-1989), Coordinator of the Statistical Consulting unit at QUT (1995-2001) and co-Director of Newstat Ltd at The University of Newcastle (2001-2004).
- Consultancy project for over 20 industry and government client organisations in the past 5 years.
- Design and delivery of 1-5 day short courses for commercial clients and academic organisation on topics ranging from industrial statistics to frontier research; 22 courses in five Australian states and four countries in 2004-2009.

Selected Publications 2005-2010

Invited Book Chapters and Major Reviews (11)

- LEE, K., MENGERSEN, K.L., MARIN, J.-M., ROBERT, C.P. (2008) Bayesian inference on mixtures of distributions. In *Perspectives in Mathematical Sciences I: Probability and Statistics.* Editors N.S.N. Sastry, T.S.R.K. Rao, M. Delampady, B. Rajeev. Statistical Science and Interdisciplinary Research Volume 7, World Scientific Press.

- DENHAM, R.J. and MENGERSEN, K.L. (2007) Geographically assisted elicitation of expert opinion for regression models. Bayesian Statistics 8. Edited by J.M. Bernardo, M.J. Bayarri, J.O. Berger, A.P. Dawid, D. Heckerman, A.F.M. Smith, M. West. Oxford University Press. ISBN-13:978-0-19-921465-5.
- MARIN, J.-M., MENGERSEN, K., ROBERT, C.P. (2005) Bayesian Mixtures. Handbook of Statistics Vol. 25, on Bayesian Statistics. Editors D. Dey and C.R. Rao. Elsevier. (50 pp.)
- Refereed International Journal Articles`- Accepted (49)
- STANAWAY, M., REEVES, R., MENGERSEN, K. (2010) Hierarchical Bayesian modelling of early detection surveillance for plant pest invasions. J. Environmental and Ecological Statistics. Acc. 03/10.
- HU, W., CLEMENTS, A., WILLIAMS, G., TONG, S., MENGERSEN, K. (2009) Bayesian spatiotemporal analysis of socio-ecologic drivers of Ross River virus transmission in Queensland, Australia. American Journal of Tropical Medicine and Hygiene. Acc. 12/09.
- JARRAD, F.C., BARRETT, S., MURRAY, J., PARKES, J., STOKLOSA, R., MENGERSEN, K., WHITTLE, P. (2009) Improved design method for biosecurity surveillance and early detection of non-indigenous rats. New Zealand Journal of Ecology Special Issue. Acc. 10/09.
- JOHNSON, S., HAMILTON, G., FIELDING, F., MENGERSEN, K. (2009) An integrated Bayesian Network approach to Lyngbya majuscule bloom initiation. Marine Environmental Research. Acc. 07/09.
- BARRETT, S., WHITTLE, P., MENGERSEN, K., STOKLOSA, R. (2009) Biosecurity threats: the design of surveillance systems, based on power and risk. Environmental and Ecological Statistics. Online DOI 10.1007/s10651-009-0113-4
- JAMES, A., LOW CHOY, S., MENGERSEN, K. (2009) Elicitator: an expert elicitation tool for ecology. Environmental Modelling and Software. Acc. 07/09. http://dx.doi.org/10.1016/j.envsoft.2009.07.003
- FALK, M., DENHAM, R., MENGERSEN, K. (2009) Estimating uncertainty in the revised universal soil loss equation via Bayesian melding. J. Agricultural, Biological and Environmental Statistics. Acc. 03/09.
- LOW CHOY, S., O'LEARY, R.A., MENGERSEN, K. (2008) Elicitation by design in ecology: using expert opinion to inform priors for Bayesian statistical models. Ecology. Acc. 05/08.
- Refereed International Journal Articles - Published (46)
- STRICKLAND, C., DENHAM, R., MENGERSEN, K. (2009) Efficient Bayesian estimation of multivariate state space models. Computational Statistics and Data Analysis.53, 4116-4125.
- DENHAM, R., MENGERSEN, K. (2007) Eliciting expert opinion for regression models with geographical data. J. Bayesian Analysis. 2(1), 99-136.
- Selected Publications prior to 2005
- Refereed Conference Publications (20)
- Refereed International Journal Articles - Published (46)
- MARTIN, T.G., KUHNERT, P.M., MENGERSEN, K., POSSINGHAM, H.P. (2004) The power of expert opinion in ecological models: A Bayesian approach examining the impact of cattle grazing on birds. Ecological Applications. 15 (1): 266-280.
- BESAG, J., GREEN, P., HIGDON, D., MENGERSEN, K. (1995) Bayesian computation and stochastic systems. Statist. Science 10, 3-66.

Curriculum vitae – Dr Peter Whittle

Personal details

Full name: Peter James Latimer Whittle
Born: 7 June 1960, Adelaide, Australia
Nationality: Australian
Phone: +61 (0) 434 729 855
Email: peter.whittle@qut.edu.au
Address: GPO Box 2434, Brisbane QLD 4001, Australia

Employment

Principal Research Fellow, Faculty of Science and Technology, Queensland University of Technology

Qualifications

Bachelor of Agricultural Science, University of Adelaide, 1984
Doctor of Philosophy, Faculty of Natural Resource Sciences, University of Adelaide, 1993
Master of Business Administration, University of Queensland, 2003

Work history

2007-present Principal Research Fellow - Cooperative Research Centre for National Plant Biosecurity, QUT – *developing biosecurity surveillance system designs; collaborating on risk analysis research; biosecurity surveillance scoping study for grains industries*

2003 –2007 Principal Scientist, Biosecurity Queensland, Department of Primary Industries and Fisheries, Brisbane – *key state and national roles in biosecurity science, policy, regulatory services, management*

2000 – 2003 Principal Scientist, Animal & Plant Health Service, Department of Primary Industries, Cairns – *managing projects in agricultural and remote area biosecurity of animals and plants. Preparedness, surveillance, emergency response, eradication, market access*

1994 - 2000 Plant Pathologist, Bureau of Sugar Experiment Stations, Brisbane, Qld – *operating sugarcane quarantine and biosecurity, domestic and international; industry services in crop disease management; research in diagnostic systems and nematology*

1992-1993 Special Projects Officer, Research Office, Queensland University of Technology

1985 – 1991 Plant Pathologist, South Australian Research & Development Institute – *research and industry services on fungal and nematode root diseases of wheat and barley; PhD studies.*

Recent publications

Barrett, S., Whittle, P., Mengersen, K., & Stoklosa, R. (2009). Biosecurity threats: the design of surveillance systems, based on power and risk *Journal of Environmental and Ecological Statistics, DOI 10.1007/s10651-009-0113-4*.

Burgman, M., Mittinty, M., Whittle, P., & Mengersen, K. (2010). ACERA Project 0709 Comparing Biosecurity Risk Assessment Systems. Final Report (pp. 81): ACERA, University of Melbourne.

Davidovitch, L., Stoklosa, R., Majer, J., Nietrzeba, A., Whittle, P., Mengersen, K., et al. (2009). Info-Gap theory and robust design of surveillance for invasive species: The case study of Barrow Island. *Journal of Environmental Management, 90*(8), 2785-2793.

Gambley, C. F., Miles, A. K., Doogan, V., Thomas, J. E., Parmenter, K., & Whittle, P. J. L. (2009). The distribution and spread of citrus canker in Emerald, Australia. *Australasian Plant Pathology, 38*(6), 547-557. doi: doi:10.1071/AP09043

Jarrad, F., Barrett, S., Murray, J., Stoklosa, R., Whittle, P., & Mengersen, K. (2010). Ecological aspects of biosecurity surveillance design for the detection of multiple invasive animal species. *Biological Invasions*. doi: 10.1007/s10530-010-9870-0

Jarrad, F., Whittle, P., Barrett, S., & Mengersen, K. (2010). Barrow Island's biosecurity: catching the unknown invader. *Significance, 7*(2), 53-57. doi: 10.1111/j.1740-9713.2010.00418.x

Mengersen, K., & Whittle, P. (2011 in press). Improving accuracy and intelligibility of decisions. Invited paper, OECD Conference on 'Decision Making and Science: the balancing of risk based decisions that influence the sustainability of agricultural production'. Berlin, Germany, 7-8 October 2010. *Zeitschrift für Verbraucherschutz und Lebensmittelsicherheit*.

Whittle, P., & Sheppard, A. (2010). Australian biosecurity policies and applications for emerging plant pests. In J. Barnouin & I. Sache (Eds.), *Les Maladies Emergentez Chez le vegetal, l'animal et l'homme*. Versailles Cedex, France: Editions Quae.

John Holt

Specialisation	**Biological / natural resource modeller**
Name	Johnson Holt
Nationality	British
Education	PhD in Entomology (University of Southampton, UK, 1983)
	BSc (upper second) Zoology, University of Durham, UK, 1979
Languages	English
Country Experience	Caribbean, Philippines, Uganda, Kenya, Tanzania, Botswana, South Africa, Namibia, India, Bangladesh

Employment Record

2008 - present	Imperial College, Centre for Environmental Policy, Research Fellow
	University of Greenwich, Reader in Resource Modelling
2007 – present	Natural Resources Institute (NRI), Higher Scientific Officer then Principal
1987 – 2007	Scientist
1984 - 1987	Imperial College, Postdoctoral fellow, Pest management systems analysis
1984	Southampton University, Postdoctoral fellow, Economics of pest forecasting

Professional profile

- Twenty five years experience of research, project management and consultancy.
- Risk analysis models (multi-attribute decision models and Bayesian Belief Networks) for non-native invasive species and phytosanitary procedures,
- Mathematical and simulation modelling of the population dynamics of insect pests and weeds, and the epidemiology of plant virus diseases and fungal pathogens. Spatial and temporal patterns of pests and diseases
- Application of models to pest forecasting and control, pesticide targeting, environmental impact and the evolution of pesticide resistance.
- Decision analysis, bio-economic modelling for pest management.

Professional contribution

- Over 75 publications / book chapters in international peers reviewed journals/ books
- More than 15 major projects (ranging from £50K - £350K) managed in the last 20 years
- Supervised 6 PhD students and 2 Royal Society fellows (1996 - 2008)
- Developed MSc course unit in Pest systems modelling (2000 - 2003)
- Head of the Pest Systems modelling research Group, NRI (1997-2002)
- Deputy Head of Plant Animal and Human Health Group, NRI (2001 to 2006)

Recent publications

- MacLeod, A., Anderson, H., van der Gaag, D. J., Holt, J., Karadjova, O., Kehlenbeck, H., Labonne, G., Pruvost, O., Reynaud, P., Schrader, G., Smith, J., Steffek, R., Viaene, N. and Vloutoglou, I. (2010) Prima phacie: a new European Food Safety Authority funded research project taking a comparative approach to pest risk assessment and methods to evaluate pest risk management options, EPPO Bulletin, 40, 435-439.
- Mumford JD, Booy O, Baker RHA, Rees M, Copp GH, Black K, Holt J, Leach AW, Hartley M. (2010) Invasive species risk assessment in Great Britain, Aspects of Applied Biology, 104, 49-54.
- John Mumford, Richard H.A. Baker, Olaf Booy, John Holt, Kenny Black, Mark Rees, Niall Moore, Adrian Leach, Matthew Hartley and Gordon H. Copp (2010) The Great Britain Non-native Species Risk Analysis Scheme (NAPRA) – a national scheme nested within an international risk framework. Published poster in Workshop on non-native species risk, Bordeaux, 12-14 October 2010.
- Holt, J., Pavis, C., Marquier, M., Chancellor, T.C.B., Urbino, C., Boissot, N. (2008) Insect-screened cultivation to reduce the invasion of tomato crops by Bemisia tabaci: modelling the impact on virus disease and vector. *Agricultural and Forest Entomology*, 10, 61-67.
- Baker, R. H. A, Black, R., Copp, G. H., Haysom, K. A., Hulme, P. E., Thomas, M. B., Brown, A., Brown, M., Ray J. C. Cannon, R. J. C., Ellis, J., Ellis, M., Ferris, R., Glaves, P., Gozlan, R. E., Holt, J., Howe, E., Knight, J. D., MacLeod, A., Moore, N. P., Mumford, J. D., Murphy, S. T., Parrott, D., Sansford, C. E., Smith, G. C., St-Hilaire, S., Ward, N. L. (2007). The UK risk assessment scheme for all non-native species. *Neobiota*, ISSN: 1681-5947.
- Holt, J., Black, R & Roshan Abdalla (2006) A rigorous yet simple quantitative risk assessment method for quarantine pests and non-native organisms. *Annals of Applied Biology* 149, 167-173.
- Holt, J., Davis, S. & Leirs H. (2006) A model of Leptosirosis infection in an African rodent. *Acta Tropica* 99, 218-225.
- Chancellor, T.C.B, Holt, J., Valereal, S., Tiongco, M. &. and Venn, J. (2006) Spread of plant virus disease to new plantings: a case study of rice tungro disease. *Advances in Virus Research* 66, 1-29.
- Holt, J., Mushobozi, W., Day, R.K., Knight, J.D., Kimani, M., Njuki, J. & Musebe, R. (2006). A simple Baysian network to interpret the accuracy of armyworm outbreak forecasts. *Annals of Applied Biology* 148, 141-146.
- Holt, J. (2006) Score averaging for alien species risk assessment: A probabilistic alternative. *Journal of Environmental Management* 81, 58-62.
- Holt, J. & Cooper, J. (2006) A model to compare the suitability of locust hopper targets for control by insecticide barriers. *Ecological Modelling* 195, 273-280.
- Jeger, M.J., Holt, J., van den Bosch, F. and Madden, L.V. (2004) Epidemiology of insect transmitted plant viruses: Modelling disease dynamics and control interventions. *Physiological Entomology*, 29, 291-304.

Dr Adrian Leach

Research Associate
Centre for Environmental Policy
Faculty of Natural Sciences, Imperial College London,
Silwood Park, Ascot, Berkshire, SL5 7PY
United Kingdom
Tel: +44 (0) 1557 331462
E-mail: a.w.leach@imperial.ac.uk
Web: http://www3.imperial.ac.uk/people/a.w.leach

Professional profile

Adrian Leach's research focus is the development of computer based tools to improve decision making in resource management. The models have a bio-economic focus and most contain stochastic elements to simulate risk and uncertainty within different systems. The tools he has developed range from the evaluation of pesticide costs on human health and the environment, spatial cost\benefit tools in agriculture and public health, tools for comparing economic risk of pests and invasive species, a system to assess economic risk in fisheries and systems for the improved visualisation of score risk from invasive species. The work of our group has a strong policy focus so that the tools developed are aimed to provide robust options to policy makers.

Qualifications

BSc in Biology at Imperial College London..... 1989-1991
Ph.D. in Environmental Technology, Imperial College London 1996
Courses in statistics and generalised linear modelling and time series at Silwood Park,
Imperial College London 1993, 2000
Professional bodies: Tropical Agriculture Association

Positions held

Ph.D. Student, University of London..... 1992-1996
Research focus: Decisions tool for agricultural pest management
Research scientist, Centre for Environmental Policy, Imperial College London……1996-present
Research focus: Developing decision tools for Resource Management
Teaching: Development of teaching packages and teaching in modelling workshops in undergraduate and postgraduate classes at Imperial and Edinburgh University including ecological management (MSc); risk and the environment (MSc); pest management (MSc).
Consultant to private industry, donor organisations, government……1996-present
Research focus: Varied but mainly focusing on risk and policy, the development of decision making tools and simulation models.

Country experience

Egypt, Colombia, Mexico, India, Bangladesh, Mauritius, Seychelles, Malaysia, Tunisia, Israel, Tanzania, Senegal,

Selected Publications:

1. Leach AW, Mumford JD, (2011) Pesticide Environmental Accounting: A decision-making tool estimating external costs of pesticides, Journal of Consumer Protection and Food Safety, 2011. Vol: In press
2. Mumford, J.D., Baker, R.H.A., Booy, O., John Holt, Kenny Black, Mark Rees, Niall Moore, Adrian Leach, Matthew Hartley and Gordon H. Copp (2010) The Great Britain Non-native Species Risk Analysis Scheme (NAPRA) – a national scheme nested within an international risk framework. Published poster in Workshop on non-native species risk, Bordeaux, 12-14 October 2010.
3. Mumford JD, Booy O, Baker RHA, Rees M, Copp GH, Black K, Holt J, Leach AW, Hartley M. (2010) Invasive species risk assessment in Great Britain, Aspects of Applied Biology, 2010, Vol:104, Pages:49-54, ISSN:0265-1491
4. Carracso LR, Mumford JD, MacLeod A, Harwood T, Grabenweger G, Leach AW, Knight JD, Baker RHA. (2010). Unveiling human-assisted dispersal mechanisms in invasive alien insects: integration of spatial stochastic simulation and phenology models, Ecological Modelling, 2010, Vol:221, Pages:2068-2075(doi)
5. J. D. Mumford; A. W. Leach; P. Levontin; L. T. Kell (2009) Insurance mechanisms to mediate economic risks in marine fisheries. ICES Journal of Marine Science. doi: 10.1093/icesjms/fsp100
6. Mumford, J.D., Leach, A.W., Levontin, P., Kell, L. (2008) The potential for insurance to mediate economic risks in marine fisheries, Fourteenth Biennial Conference of the International Institute of Fisheries Economics & Trade (IIFET), Proceedings of the Fourteenth Biennial Conference of the International Institute of Fisheries Economics & Trade (IIFET), Corvalis, Oregon, USA. The International Institute of Fisheries Economics & Trade, 2008
7. Leach, A W, Mullié, W C, Mumford, J D, Waibel, H. (2008) Spatial and historical analysis of pesticide externalities in locust control in Senegal, Rome, Italy, Publisher: FAO, Pages: 1 - 91
8. Leach, A.W., Mumford, J.D. (2008) Pesticide Environmental Accounting: A method for assessing the external costs of individual pesticide applications, Environ Pollut, 2008, Vol: 151, Pages: 139 - 147, ISSN: 0269-7491
9. Waage, J.K., Mumford, J.D., Leach, A.W., Knight, J.D., Quinlan, M.M. (2007). Responsibility and cost-sharing in quarantine plant health, Responsibility and cost-sharing in quarantine plant health, London, United Kingdom, Publisher: DEFRA,, Pages: 1 - 126
10. Leach, A.W., Mumford, J.D., Enkerlin, W. (2007). Cost-Benefit Analysis Model: A Tool for Area-wide Fruit Fly Management, Vienna, Austria, Publisher: International Atomic Energy Agency.
11. Bonne G, Gopaul S, Leach AW, Knight J, Price NS, Stonehouse JM, Stravens R. Fruit Fly Ecology in Seychelles and Mauritius, ISBN:99903-71-04-0
12. Leach, A.W., Mumford, J.D., Krauss, U. (2002) Modelling Moniliophthora roreri in Costa Rica. Crop Prot, **21**, Pages: 317 - 326, ISSN: 0261-2194

4. GOVERNANCE WP

Professor John D Mumford

Professor of Natural Resource Management

Director
Centre for Environmental Policy
Faculty of Natural Sciences, Imperial College London,
Silwood Park, Ascot, Berkshire, SL5 7PY
United Kingdom

Tel: +44 (0) 207 594 2206 (or 9301)
Fax: +44 (0) 207 594 2308
E-mail: j.mumford@imperial.ac.uk
Web: www.imperial.ac.uk/people/j.mumford

Professional profile:

- John Mumford works at the interface of applied ecological management and social/economic management of environmental and development issues, agricultural pests and invasive species, fisheries, and in the development of environmental risk management systems. He is an authority on economic, decision and policy analyses for biosecurity and resource management risks. He has led international missions to determine environmental risk management research, training and implementation priorities and is and has been a member of advisory bodies for UK and UN technical cooperation agencies in agricultural and environmental development. Within the Centre for Environmental Policy he has been responsible for research groups in applied ecology and environmental management. He has been responsible for implementation and evaluation of integrated pest management programmes in cocoa, coffee, rice, cotton, fruit and other crops and for migratory and other public sector pest control programmes, such as eradication, suppression and quarantine. The management and evaluation of risk in the environment is an area of particular concern, with applications in biosecurity, fisheries, resource management and environmental governance. His teaching covers the interactions of economics and ecology in many aspects of applied resource management, environmental risk and pest management. He has been Director, Centre for Environmental Policy, Faculty of Natural Sciences, Imperial College London, UK since October 2006.

Qualifications:

- BS, 1974 (Agriculture, Purdue); PhD Applied Entomology, 1978 (London) [Applied Entomology, Imperial College]
- Professional bodies: Agricultural Economics Society; Royal Entomological Society; Entomological Society of America; European Association of Agricultural Economics

External Research/Advisory Committees and Commercial Roles:

- Great Britain Non-Native Species Risk Analysis Panel (Chair 2007-) (supports DEFRA, Scottish Executive, Welsh Assembly decisions on management of non-native species threats)
- United Kingdom Department for International Development Research Advisory Group (2010-)
- Technical Adviser, Evaluation of the European Community Plant Health Regime for DG-SANCO, Food Chain Evaluation Consortium (2010)

Awards:

- UK Department for International Development Renewable Natural Resources Research Prize 2000 (a prize independently judged to be the best project within DfID's annual £25 million portfolio of international natural resources research, £253,000 awarded)
- Distinguished Agricultural Alumni Award, Purdue University, USA 2010

Selected recent journal articles:

1. Leach, A.W., Mumford, J.D. (2011) Pesticide Environmental Accounting: A decision-making tool estimating external costs of pesticides. *Journal of Consumer Protection and Food Safety*, (in press)
2. Mumford, J.D. (2011) Compensation for quarantine breaches in plant health. *Journal of Consumer Protection and Food Safety*, (in press)
3. Mumford, J.D., Booy, O., Baker, R.H.A., Rees, M., Copp, G.H., Black, K., Holt, J., Leach, A.W., Hartley, M. (2010) Invasive species risk assessment in Great Britain. *Aspects of Applied Biology*, 104: 49-54.
4. Carrasco, L.R., Mumford, J.D., MacLeod, A., Harwood, T. Grabenweger, G., Leach, A.,W., Knight, J.D., and Baker, R.H.A. (2010) Unveiling human-assisted dispersal mechanisms in invasive alien insects: integration of spatial stochastic simulation and phenology models. *Ecological Modelling*, (in press).

5. Carrasco, L.R., Mumford, J.D., MacLeod, A., Knight, J.D., and Baker, R.H.A. (2010) Comprehensive bioeconomic modelling of multiple harmful non-indigenous species. *Ecological Economics,* 69:1303-1312. doi:10.1016/j.ecolecon.2010.02.001
6. Carrasco, L.R., Harwood, T.D, Toepfer, S., MacLeod, A., Levay, N., Kiss, J, Baker, R.H.A., Mumford, J.D., and Knight, J.D. (2010) Dispersal kernels of the invasive alien western corn rootworm and the effectiveness of buffer zones in eradication programmes in Europe. *Annals of Applied Biology*, 156:63-77.
7. Carrasco, L.R., Baker, R., MacLeod, A., Knight, J.D., and Mumford, J.D. (2009) Optimal and robust control of invasive alien species spreading in homogenous landscapes. Journal of the Royal Society Interface, 15:63-77. http://rsif.royalsocietypublishing.org/content/early/2009/09/08/rsif.2009.0266.full
8. Mumford, J., Quinlan, M. M., Beech, C. J., Alphey, L., Bayard, V., Capurro, M. L., Kittayapong, P., Knight, J. D., Marrelli, M. T., Ombongi, K., Ramsey, J.M., and Reuben, R. (2009) MosqGuide: A project to develop best practice guidance for the deployment of innovative genetic vector control strategies for malaria and dengue. *Asia-Pacific Journal of Molecular Biology and Biotechnology,* 17:93-95 http://www.msmbb.org.my/apjmbb/html173/173cont.htm
9. Beech, C. J., Vassan, S. S., Quinlan, M.M., Capurro, M.L., Alphey, L., Bayard, V., Bouare, M., McLeod, M.C., Kittayapong, P., Lavery, J.V., Lim, L.H., Marrelli, M.T. Nagaraju, J., Ombongi, K., Othman, R. Y., Pillai, V., Ramsey, J., Reuben, R., Rose, R.I., Tyagi, B .K., and Mumford, J. (2009) Deployment of innovative genetic vector control strategies: Progress on regulatory and biosafety aspects and development of best-practice guidance. *Asia Pacific Journal of Molecular Biology and Biotechnology,* 17:75-85. http://www.msmbb.org.my/apjmbb/html173/173cont.htm
10. Mumford, J.D., Leach A. W., Levontin P., Kell L. (2009) Insurance mechanisms to mediate economic risks in marine fisheries. *ICES Journal of Marine Science*, 66:950-959; doi:10.1093/icesjms/fsp100
11. Copp, G.H., Vilizzi, L., Mumford, J., Fenwick, G.V., Godard, M.J., Gozlan, R.E. 2008. Calibration of FISK, an invasiveness screening tool for non-native freshwater fishes. *Risk Analysis*, 29:457-467.
12. Waage, J.K., Mumford, J.D. (2008) Agricultural biosecurity. *Philosophical Transactions of the Royal Society B*, 363:863-876
13. Leach, A.W. and Mumford, J.D. (2007) Pesticide Environmental Accounting: A method for assessing the external costs of individual pesticide applications. *Environmental Pollution*, 151:139-147. ISSN 0269-7491
14. Mumford, J.D. (2007) Compensation payments for quarantine breaches in plant health? *Phytoparasitica*, 35:219-221
15. Stonehouse, J.M., Mumford, J.D., Verghese, A., Shukla, R.P., Satpathy, S., Singh, H.S., Jiji, T., Thomas, J., Patel, Z.P., Jhala,, R.C., Patel, R.K., Manzar, A., Shivalingaswamy, M.S., Mohantha, A.K., Nair, B., Vidya, C.V., Jagadale, V.S., Sisodiya, D.B., Joshi, B.K. (2007) Village-level area-wide fruit fly suppression in India: Bait application and male annihilation at village level and farm level. *Crop Protection*, 26:788-793.
16. Fraser, R.W., Cook, D.C., Mumford, J.D., Wilby, A., and Waage, J.K. (2006) Managing outbreaks of invasive species: Eradication vs suppression. *International Journal of Pest Management*, 52:261-268.
17. Mumford, J.D. (2005) Community actions to improve productivity, quality and markets in fruit and cocoa pest management in Asia. *Aspects of Applied Biology* 75:47-52.

Books edited/book chapters

1. James, A.A., Mumford, J.D., James. S.L., Toure, Y.T. (2010) *Progress and prospects for the use of genetically modified mosquitoes to inhibit disease transmission.* WHO, Geneva, Switzerland. 64pp. ISBN 978 92 4 159923 8 http://apps.who.int/tdr/publications/training-guideline-publications/gmm-report/pdf/gmm-report.pdf
2. Kovaleski, A., Mumford, J.D. (2007). Pulling out the evil by the root: The codling moth eradication program in Brazil. In: Vreysen M.J.B., Robinson A.S., Hendrichs J. (eds.) Area-*Wide Control of Insect Pests: From Research to Field Implementation,* Springer, Dordrecht, Netherlands. pp581-590. ISBN 978-1-4020-6058-8
3. Mumford, J.D. (2007). Model frameworks for strategic economic management of invasive species. In: Lansink, A.O. ed. *Economics of Plant Health*. 202pp. Springer, Dordrecht, Netherlands. pp181-190. ISBN 1-4020-5826-8

Agency and Other Reports

1. Mumford, J.D., Knight, J.D., and Kenyon, L. 2009. Honeybee health (risks) in England and Wales. National Audit Office, London, UK. 89pp. http://www.nao.org.uk/publications/0809/the_health_of_livestock.aspx
2. Parrot, D. Roy S, Baker R, Cannon R, Eyre D, Hill M, Wagner M, Preston C, Roy H, Beckmann B, Copp, G.H., Edmonds, N., Ellis, J., Laing, I., Britton, J.R., Gozlan, R.E., and Mumford, J. 2009. *Horizon scanning for new invasive non-native animal species in England*. Natural England Commissioned Report NECR009, Natural England, Sheffield, United Kingdom. 22 May 2009. 114pp. http://naturalengland.etraderstores.com/NaturalEnglandShop/product.aspx?ProductID=260f0d5f-eefe-4b5c-9051-92d43b7456c1
3. Leach, A.W., Mullie, W.C., Mumford, J.D., Waibel, H. (2008). Spatial and historical analysis of pesticide externalities in locust control in Senegal. FAO, Rome, Italy. 91pp.
4. Quinlan, M.M., Mumford, J.D., Knight, J.D. and Stonehouse, J.M. (2008). Model Business Plan for a Sterile Insect Production Facility. IAEA-MBP. International Atomic Energy Agency, Vienna, Austria. 386pp. ISBN 978-92-0-110007-8 http://www-pub.iaea.org/MTCD/publications/PubDetails.asp?pubId=7130
5. Waage, J.K., Mumford, J.D., Leach, A.W., Knight, J.D., Quinlan, M.M. 2007. Responsibility and cost-sharing in quarantine plant health. Department for Environment, Food and Rural Affairs, London, United Kingdom. 126pp
6. Brader, L., Mumford, J., Nalder, K., Sauvinet-Bedouin, R., Holleran, E. 2007. Independent evaluation of the workings of the International Plant Protection Convention and its institutional arrangements, FAO, Rome, Italy. 73pp. (www.ippc.int)
7. Mumford, J.D. (2005) Economic analysis of role of sterile insect technique for management of codling moth (*Cydia pomonella*) in Brazil. International Atomic Energy Agency, Vienna, Austria. 14pp.
8. Mumford, J.D. (2005) Implications for controls on New Organism Releases under the HSNO Act. Environmental Risk Management Agency, Wellington, New Zealand. 17pp.
9. Waage, J.K., Fraser, R.W. Mumford, J.D., Cook, D.C., and Wilby, A., (2005) A new agenda for biosecurity. DEFRA, London, UK. 198pp.

Dr Jonathan D Knight

Senior Lecturer, Centre for Environmental Policy Imperial College London Silwood Park Campus, Ascot, Berkshire SL5 7PY United Kingdom	Tel: +44 (0) 207 594 2496 Fax: +44 (0) 207 594 2308 E-mail: j.d.knight@imperial.ac.uk

Professional profile:

After training and teaching in agricultural entomology, Jon Knight has for the past 20 years been involved in researching and developing improvements in pest management. A significant part of this work has concentrated on identifying the needs of potential users through rigorous problem specification and investigation of likely requirements, using a variety of decision analysis techniques applied in participatory workshops. An array of computer based tools such as databases; expert or decision support systems and simulation models are used in seeking solutions to problems such as selection of methods of control, timing of control and pest forecasting. An important component of this work has been the economic analysis of the control methods and programmes.

Particular problems addressed have included the forecasting and management of aphids in the UK, investigating the impacts of pollution on aphid abundance, economic assessment of area wide control for fruit flies and for tsetse flies, the assessment of grain quality and its management during storage, and the development of a community based forecasting system for armyworm in east and southern Africa.

Within the Centre for Environmental Policy he has been responsible for the running of the Global Environmental Change and Policy option and currently convenes the Ecological Management option of the MSc in Environmental Technology. He has experience of working and teaching in a number of other countries and has published a number of papers in international journals.

Qualifications:

1987:	PhD Agricultural Entomology. University of Leeds, UK
1983:	BSc Agricultural Zoology. University of Glasgow, UK

Professional associations:

Association of Applied Biology (Honorary Treasurer, Trustee and Council Member)

Other Professional Activities:

2008 -	Member of Editorial Board for The Environmentalist
2006 -	External Examiner for University of Greenwich, MSc in Natural Resources
2003, 2005	Member of Framework 6 Evaluation panel for Scientific Support to Policies
2003 -	Member of Editorial Board Bulletin of Entomological Research
1996 -	Trustee of Association of Applied Biologists (Meetings Treasurer 2003-2007, Treasurer 2008 onwards)

Appointments:

2000 to date:	Senior Lecturer in Environmental Information Technology, Department of Environmental Science and Technology, Imperial College.
1995 - 2000:	Lecturer in Environmental Information Technology, Centre for Environmental Technology
1993-1995:	Pest Management consultant, Imperial College, Centre for Environmental Technology, UK
1988-1993:	Post-Doctoral Research Associate, Imperial College, Department of Biology
1988:	Project Manager, Department of Continued Professional Education, University of Leeds, UK
1987-1988:	Lecturer in Agricultural Entomology, Department of Biology, University of Leeds, UK

Recent Research Contracts/Projects:

Senegal	*International Atomic Energy Agency (2009/2010). Implementing the pre-operational phase to create a zone free of* Glossina palpalis Gambiensis *using the sterile insect technique – Development of a questionnaire for socio-economic baseline data collection.*
Global	World Health Organization (WHO) Special Programme for Research and Training in Tropical Diseases (TDR) (2008). Best-practice Guidance For Deployment Of Genetic Control Methods Against Mosquito Vectors In Disease Endemic Countries
Uzbekistan	*GTZ (2008). Workshop to draft recommendations for the management of the Baluchistan melon fly in Central Asia – Workshop chair and facilitator*
UK	*National Audit Office (2008). Safeguarding Health of Honeybees*

Publications:

Journals

- KNIGHT, J.D. & Wilkin, D.R. (2010) Development And Validation Of On-Farm Sampling Methods For The Collection Of Marketing (Quality) Samples At Harvest, Journal of Stored Products Research 46, 221-227

- Carracso LR, Mumford JD, MacLeod A, Harwood T, Grabenweger G, Leach AW, KNIGHT JD, RHA Baker (2010) Unveiling human-assisted dispersal mechanisms in invasive alien insects: integration of spatial stochastic simulation and phenology models, Ecological Modelling, 2212068-2075
- Carrasco, LR, Harwood, TD, Toepfer, S, Macleod, A, Levay, N, Baker, RHA, Mumford, JD, & KNIGHT JD. (2010) Dispersal kernels of the invasive alien western corn rootworm and the effectiveness of buffer zones in eradication programmes in Europe. Annals of Applied Biology 156, 63-77
- Carrasco L, Mumford J, Macleod A, KNIGHT J, Baker R (2010) Comprehensive bioeconomic modelling of multiple harmful non-indigenous species, Ecological Economics, 69, 1303-1312
- Carrasco, LR, Baker, R, Macleod, A, KNIGHT, JD, Mumford, JD, (2009) Optimal and robust control of invasive alien species spreading in homogeneous landscapes., J R Soc Interface, 7, 529-540
- Mumford J, Quinlan M, Beech C, Alphey L, Bayard V, Capurro M, Kittayapong P, KNIGHT J, Marrelli M, Ombongi K, Ramsey J (2009) MosqGuide: A project to develop best practice guidance for the deployment of innovative genetic vector control strategies for malaria and dengue, , Asia-Pacific Journal of Molecular Biology and Biotechnology, 17, 93-95
- Baker, RHA, Black, R, Copp, GH, Haysom, KA, Hulme, PE, Thomas, MB, Brown, A, Brown, M, Cannon, RJC, Ellis, J, Ellis, M, Ferris, R, Glaves, P, Gozlan, RE, Holt, J, Howe, E, Knight, JD, MacLeod, A, Moore, NP, Mumford, JD, Murphy, ST, Parrot, D, Sansford, CE, Smith, GC, St Hilaire, S, Ward, NL, The UK risk assessment scheme for all non-native species, Neobiota, 2008, Vol: 7, Pages: 46 - 57, ISSN: 1681-5947
- Ditt, E.H., KNIGHT, J.D., Mourato, S, Padua, C.V, Martins, R.R, Ghazoul, J. (2008) Defying legal protection of Atlantic Forest in the transforming landscape around the Atibainha reservoir, south-eastern Brazil, Landscape and Urban Planning 86, 276 – 283.
- Holt, J., Mushobozi, W., Day, R.K. & KNIGHT, J.D. (2007) A simple Bayesian network to interpret the accuracy of armyworm outbreak forecasts. Annals of applied biology 148,141-146.
- Zitsanza, E. S. Giga, D. P. & KNIGHT, J. D. (2006) Oviposition site preferences by Helicoverpa armigera (Lepidoptera: Noctuidae): effect of season and density on distribution of eggs on plants. South African Journal of Plant and Soil 23,138-141

Book Chapters

- KNIGHT, J.D. & Thackray, D.J. (2007) Decision Support Systems. In: Aphids as Crop Pests. Eds van Emden, H.F. & Harrington, R. CABI Publishing.
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- Mumford, J. D. & KNIGHT, J.D. (1997) Injury, Damage and Threshold Concepts. In: Dent, D.R. & Walton, M.P. (Eds.) *Methods in Agricultural Entomology*, CAB International.

Books

- Fleurat-Lessard, F., NDIAYE, A. and KNIGHT J.D. (2005). Stored Malting Barley: Management Of Quality Using An Expert System (L'orge De Brasserie: Maitrise De La Qualite A L'aide D'un Systeme Expert). Les Colloques, n°101, INRA.
- Bonne, G., Gopaul, S., Leach, A.W., KNIGHT, J., Price, N.S, Stonehouse, J.M., & Stravens, R. (2001) *Fruit Fly Ecology in Seychelles and Mauritius.* (bilingual edition) (Quatre Bornes, Mauritius: Indian Ocean Commission). 40pp. ISBN 99903-71-04-0.
- Bullard, M.J., Christian, D.G., KNIGHT, J.D., Lainsbury, M.A., & Parker, S.R. (Eds.) (2001) Biomass and Energy Crops II. *Aspects of Applied Biology* **65** 374pp.

Reports:

- KNIGHT, J.D. (2008). Assessing and addressing the impact of warmer autumns on the success of grain cooling. Project Rpeort No. 443, Home-Grown Cereals Authority, 45pp
- KNIGHT, J.D. (2008) Report to IAEA project SEY-5-003-9001. Feasibility of Integrating the Sterile Insect Technique to the Ongoing Area-wide Melon Fly Eradication Programme 13pp.
- KNIGHT, J. D., Wilkin, R. & Rivett, J. (2004) Developing and Validating On-Farm Sampling Protocols: Sampling in Store and During Out-Loading. Report 325, Home-Grown Cereals Authority, 17pp
- Quinlan, M.M., Mumford, J.D., KNIGHT, J.D. and Stonehouse, J.M.. (2002). Model Business Plan for a Sterile Insect Production Facility. Final Report, Project INT/5/145 Insect Pest Control Using Sterile Insect Technique. Department of Technical Co-operation, International Atomic Energy Agency. Vienna, Austria. 352 pp.

Mary Megan Quinlan

Research Fellow
Centre for Environmental Policy
Faculty of Natural Sciences
Imperial College London
Silwood Park Campus
Ascot, Berkshire, SL5 7PY

Tel: +44 (0)7590250436
Email: m.quinlan@imperial.ac.uk
Web: http://www3.imperial.ac.uk/people/m.quinlan

Professional Profile

Expert on the policies, institutional structures and methodologies of regulatory sciences for plant products. Work has often involved coordinating people and resources from the private sector with government programs in combined efforts towards development, trade and environmental objectives.

- Contractor or employee of Imperial College London; CAB International Associate: 2000-current
- InterConnect Associates, owner and consultant: 1990-2000
- USDA employee: 1985-1990 (FAS in Guatemala, OICD in Washington, DC)

Worked with a range of pest risk management issues over the past 25 years, examples include:

Harmonised approaches to PRA: Member of IPPC Expert Working Group that drafted supplements to ISPM no. 11, PRA for Quarantine Organisms, on Invasive Species and Living Modified Organisms. (Vienna, 2001; Ottawa, 2002); hosted initial discussions on draft ISPM on efficacy of phytosanitary measures (Wye, England, 2002).

Systems approach: Developing enhanced section in the EPPO PRA scheme to support use of systems approach (2008-2010). Member of upcoming IAEA/FAO Expert Consultation (June 2010).

Commodity treatment: Coordinated research by various Latin American research teams and USDA/ARS approval process for hot water treatment on mango. (US, Guatemala, Mexico, 1987-1993). Advised controlled atmosphere private company on possible uses for quarantine (US, 1999-99). Achieved recognition of research on vapor heat for tropical fruits as equivalent to HWT.

Shipping corridors and host status: Commercial banana as a host of Carambola fruit fly in South America (US, Suriname, 1990-93). Increased "admissibles list" for entry to the US through both limited port/state entry agreements and host research. Supported team to first open Japanese market to Central American fruits of minor host level to fruit flies (PROEXAG and EXITOS projects, USAID funded, Central America, 1990-95).

Preclearance and inspection: Member of Safeguarding Review team of USDA/APHIS (1999). Review of host national operations of USDA preclearance in Dominican Republic (1991).

HACCP and systems analysis: Expert Consultation IAEA/FAO on transboundary movement of sterile insects (Vienna, 2001). Liaison for banana industry with US FDA for agreeing protocol to

continue shipping from cholera epidemic zone (Peru).

Examples of Technical References

1. Quinlan MM, Knight J, Holt J, Mumford JD, Leach AW, Baker R, Petter F (2010). PRATIQUE. An EU Framework 7 Research Project: Enhancements of Pest Risk Analysis Techniques. Deliverable No. 4.5: **Specification for Systems Approach component analysis in PRA.** 19pp.
2. Quinlan MM, Knight J, Holt J, Mumford JD, Leach AW, Baker R, Petter F (2010). PRATIQUE. An EU Framework 7 Research Project: Enhancements of Pest Risk Analysis Techniques. Milestone No. 4.8: **First version of the Systems Approach module for PRA developed and tested**. 28pp.
3. Quinlan MM & Ikin R (2009). PRATIQUE. An EU Framework 7 Research Project: Enhancements of Pest Risk Analysis Techniques. Deliverable No. 4.2: **A review of the application of Systems Approach to risk management in plant health**. 69pp. Available at: https://secure.fera.defra.gov.uk/pratique/index.cfm.
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5. Quinlan MM and Larcher-Carvalho A (2007). **Tools of the Trade: The International Business of SIT**. pp425-48. In: Vreysen MJB, Robinson AS and Hendrichs J (eds). Area-Wide Control of Insect Pests: From Research to Field Implementation. Springer Publishing, Netherlands. 789pp.
6. Day RK, Quinlan MM and Ogutu WO (2006). **Analysis of the Application of the Phytosanitary Capacity Evaluation Tool**. Report to the Secretariat of the International Plant Protection Convention.
7. Kairo MTK, Cock MJW and Quinlan MM (2003). **An Assessment of the Use of the Code of Conduct for the Import and Release of Exotic Biological Control Agents (ISPM No. 3) since its endorsement as an international standard**. Biocontrol News and Information 24, 15N-27N.
8. Murphy ST, Wilde ISH, Quinlan MM, Soetikno S and Odour G (2001). **Alien Invasive Species: Review of Activities and Programmes on Prevention, Early Detection, Eradication and Control**. Commissioned by the Convention on Biological Diversity for the Sixth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) in March, 2001. Document UNEP/CBD/SBSTTA/6/INF/5.
9. FAO (2001). **The State of Food and Agriculture, special chapter on Economic Impacts of Transboundary Pests**. Co-author. Rome, 2001. pp199-267. Available at: ftp://ftp.fao.org/docrep/FAO/003/x9800e/x9800e00.pdf
10. Hallman G and Quinlan MM (1996). **Synopsis of Postharvest Quarantine Treatment Research**. In: McPheron BA and Steck GJ (eds). Fruit Fly Pests: A World Assessment of Their Biology and Management. St Lucie Press, Delray Beach, Florida. pp473-477.

Qualifications

- Bachelors Degree (cum laude) – Botany (1981), Duke University, Durham, North Carolina.
- Masters of Science - Tropical Crop Production (1984), Centro Agronómico Tropical de Investigación y Eseñanza (CATIE),), Turrialba, Costa Rica, Central America.

Name: Michael John JEGER
Nationality: British

Current position

Senior Research Investigator, Centre for Environmental Policy; and Emeritus Professor, Division of Biology, Imperial College London, Silwood Park Campus, Ascot, Berkshire SL5 7PY.
Tel: 020 759 42719 Fax: 020 759 42601 email: m.jeger@imperial.ac.uk

Academic qualifications

BA (2i) (Open) 1975, Biology and Mathematics; B.Phil. (York) 1976, Computation in the Life Sciences; PhD (Wales) 1979, Plant Pathology

Summary of expertise and experience

- Areas of specific experience are in plant disease epidemiology, mathematical modelling, plant genetic resources management and plant health risk assessment.
- Research has been done with: diseases (caused by fungi, viruses and nematodes and non-parasitic physiological disorders) of a range of crop systems including small grain cereals, temperate and tropical tree fruits, amenity and forest trees, cotton, vegetables and grassland. Collaborated extensively in multidisciplinary research involving agricultural, environmental and social scientists.
- Undertaken short-term assignments and consultancies in developing countries: including Honduras, Cameroon, Pakistan, Peru, Philippines, Indonesia, Trinidad, Kenya, St Lucia, India, Barbados, Dominica, Bhutan, Zimbabwe, Ghana, Brazil, Uganda and China.
- Published over 140 refereed research articles, over 30 book chapters and reviews, and numerous miscellaneous abstracts, bulletins and reports. Editor of four multi-authored books.
- Editor-in-Chief, European Journal of Plant Pathology, 2009 – present.
- Vice-President Association of Applied Biologists, 2007-2008; President 2009-2010.
- Chair, Plant Health Panel, European Food Standards Agency (EFSA) - currently

Previous Employment record (with position on leaving)

Oct 1999 - Jul 2000	Sainsbury Professor of Horticulture, Wye College, Wye, Ashford, Kent.
Sep 1994 - Sep1999	Professor of Ecological Plant Pathology, Wageningen University, The Netherlands.
Jun 1986 - Sep 1994	Director of Research, Natural Resources Institute, Chatham, UK.
Jun 1983 - May 1986	Associate Professor of Plant Pathology, Texas A&M University, College Station, USA.
Oct 1978 - May 1983	Senior Scientific Officer, East Malling Research Station, Maidstone, UK.

Recent research experience

Oct 1999-present	Imperial College. Adaptive evolution and fungicide resistance; Evolution of *Bemisia tabaci* and begomoviruses. Modelling incidence and spread of *Phytophthora ramorum*; Epidemiology of liverwort in nurseries; Grass-clover competition in pastures; Host-pathogen interactions in nutrient-structured grasslands; Plant genetic resources in the National Fruit Collections.
Sep 1994-Sep 1999	Wageningen Agricultural University. Ecological plant pathology and crop protection, in particular, epidemiology of vectored plant diseases, ecology of soil-borne pathogens, and mathematical modelling.
1986 - Sept 1994	Natural Resources Institute. Pathology of tropical fruit, vegetable and root crops, with emphasis on *Colletotrichum*, banana pathogens, tropical plant viruses, and tropical downy mildews.
1983 - 1986	Texas A&M University. Epidemiology of soil-borne diseases with special reference to *Phymatotrichum omnivorum, Macrophomina phaseolina, Peronosclerospora sorghi* and *Meloidogyne incognita*.
1978 - 1983	East Malling Research Station. Epidemiology and management of airborne fungal diseases of top fruit.
1976 - 1978	University College of Wales. Aberystwyth, Ph.D thesis - 'Disease spread in heterogeneous mixed stands of cereal cultivars'.
1975 - 1976	University of York. MSc dissertation - 'Phosphate uptake by a developing root system, a quantitative analysis'.

Recent professional service

Advisory Boards

2010	Chair, Review Panel for Entomology and Plant Pathology, IRRI
2009 - present	Chair, Plant Health Panel, European Food Standards Agency
2007	Chair Plant Health Division Visiting Group, Forest Research
2003 - 2010	Member DEFRA Arable Link Programme Committee
2003 - 2005	Member HDC Panel for Hardy Ornamental and Nursery Stock
2000 - 2005	Member Advisory Committee, Forest Research
1999 - 2005	Member Advisory Committee, DFID Crop Protection Programme
1996 - 2002	Member, CAB International Advisory Board for Crop Protection
1995 - 1999	Member, Scientific Committee of the Research School Production Ecology, the Netherlands

Editorial Activities

2009 – 2014	Editor in Chief, European Journal of Plant Pathology
2002 – 2003	Editorial Advisory Board, Encyclopedia of Applied Plant Sciences
1998 – 2003	Associate Editor IMA Journal of Mathematics applied in Medicine and Biology
1990 – 1994	Senior Editor Plant Pathology
1988 – 2000	Editorial Advisory Board of Ecological Modelling
1986 – 1989	Editorial Board of Plant Pathology
1985 - 1987	Associate Editor Phytopathology

Refereeing for Journals/Books

Acta Horticulturae, Agricultural Systems, Annals of Applied Biology, APS Press, Crop Protection, Ecological Modelling, Ecology, Entomologia Experimentalis et Applicata, Euphytica, European Forest Ecology and Management, Field Crops Research, International Journal of Applied Earth Observation and Geoinformation, Journal of Plant Pathology, Journal of Theoretical Biology, Nature, Netherlands Journal of Agricultural Science, New Phytologist, Philosophical Transactions: Biological Sciences, Phytoparasitica, Phytopathology, Plant Disease, Plant Pathology, Proceedings Royal Society: Biological Sciences, Science, Transactions of the British Mycological Society, Tropical Science.

Recent international consultancy and training

2011	Evaluation of BIONET network outcomes (CABI/Swiss Development Agency)
2010	Review of CABI Science
1999	ISPP Task Force on global food security, Bangkok
1997	Liaison visit to University of Lavras, Brazil; Supervisory visits to sandwich PhDs in Uganda and China.
1995	Workshop/project planning on coconut lethal yellowing disease, Ghana.
1995	NECTAR/NATURA MSc curricula development, Zimbabwe.
1994	Advisory group for World Bank, Banana Improvement Programme, Washington.
1991	Quantitative epidemiology at ICRISAT, Hyderabad; Bhutan, EC IPM project evaluation, India.
1990-1992	FAO Intergovernmental Meetings on bananas in Italy, Madeira and Honduras; Banana Improvement Programme, Technical Advisory Committee.
1990	Whitefly-transmitted viruses network, India; Monitor ODA project on yam anthracnose, CARDI, Barbados; Advisory visit to CARDI exportable tropical fruits project, Dominica.

Part C. Publications

Available at http://www3.imperial.ac.uk/people/m.jeger/publications .

JABATAN PERTANIAN
(Department of Agriculture)
BAHAGIAN PERLINDUNGAN TANAMAN DAN KUARANTIN TUMBUHAN
(Plant Protection & Quarantine Division)
WISMA TANI LAMA, JALAN SULTAN SALAHUDDIN,
50632 KUALA LUMPUR
Telefon: 03-20301400 Fax : 03- 26913530

Harap sebutkan bilangan surat kami apabila menjawab

Your ref :

Our ref. : JP PTK 207/KIE/350/G ( )

Date : 28 January 2011

STDF Secretary
World Trade Organization
Centre William Rappard
Rue de Lausanne 154
Ch-1211 Geneva
Switzerland

Dear Mr. Spreij,

APPLICATION ON BEYOND COMPLIANCE : INTEGRATED SYSTEMS APPROACH FOR PEST RISK MANAGEMENT IN SOUHTEAST ASIA

The Department of Agriculture Malaysia, which is the National Plant Protection Organization (NPPO) for Malaysia is pleased to join in this proposal to develop a Systems Approach with Pest Risk Management in the South East Asia Region.

We had hosted the first workshop involving NPPOs of other SE Asian Countries and other partners to develop the project proposal in August 2010. We strongly support the implementation of this project which is crucial in developing expertise in the region on Pest Risk Management through Integrated Systems Approach tool.

Yours sincerely,

(WAN NORMAH WAN ISMAIL)
Director
Crop Protection and Plant Quarantine Division
For Director General
Department of Agriculture Malaysia

Republic of the Philippines
Department of Agriculture
BUREAU OF PLANT INDUSTRY
Manila

692 San Andres St.,
Malate, Manila
Philippines
E-mail: buplant@yahoo.com

Tel. No. 525-79-09
525-78-57
521-29-87
Fax No. 521-76-50

18 January 2011

STDF Secretary
World Trade Organization
Centre William Rappard
Rue de Lausanne 154
CH-1211 Geneva
Switzerland

Application on Beyond Compliance: Integrated Systems Approach for Pest Risk Management in Southeast Asia

Dear Mr. Spreij,

The Bureau of Plant Industry being the National Plant Protection Organization of the Philippines hereby signifies interest and is willing to actively participate in the above mentioned project proposal whose aim is to develop the System Approach in Pest Risk Management in the SE Asia region.

We believe that the proposal can help create an advanced regional approach to pest risk management which will eventually facilitate safe trade to trading partners within and outside the region.

Our best regards.

Very truly yours,

CLARITO M. BARRON, PHD, CESO IV
Director

No. AC 2303/

National Bureau of Agricultural Commodity
and Food Standards (ACFS),
50 Phaholyothin Rd. Ladyao, Chathuchak,
Bangkok 10900, Thailand
Tel (662) 561-2277 Fax (662) 561-3373

January B.E. 2554 (2011)

Mr. Melvin Spreij,
STDF secretariat, World Trade Organization
Centre William Rappard, Rue de Lausanne 154,
CH-1211 Geneva, Switzerland

Dear Sir,

Ref : Application and Beyond Compliance: Integrated Systems Approach for Pest Risk Management in Southeast Asia

This is to indicate the interest of the National Bureau of Agricultural Commodity and Food Standards, IPPC Contact Point of Thailand in participating in the project "Beyond Compliance: Integrated Systems Approach for Pest Risk Management in Southeast Asia".

Having considered the lack of data on efficacy of integrated measures based on ISPM 14 (*The use of integrated measures in a systems approach for pest risk management:* FAO, 2002), we are pleased to join in the said project for developing and operating pest management in plant commodities of our country. In particular, we would appreciate the SPS capacity building which is the target beneficiary of the Southeast Asian countries.

Therefore, IPPC Contact Point of Thailand and the authorities concerned in national plant protection organization fully support and believe this project can enhance the competency in the Southeast Asian countries in applying systems approach, which will facilitate safe trade to, from and within the region.

Yours sincerely,

(Mr. Montri Klitsaneephaiboon)
Deputy Secretary-General
Acting for Secretary-General
National Bureau of Agricultural Commodity
and Food Standards (ACFS)

MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT (MARD)
PLANT PROTECTION DEPARTMENT (PPD)
149 - Ho Dac Di - Dong Da - Hanoi - Vietnam
Tel.: (84-4) 3533 4813; Fax.: (84-4) 3857 4719
E-mail: hoangtrungppd@fpt.vn

To: STDF Secretary
World Trade Organization
Centre William Rappard
Rue de Lausanne 154
CH – 1211 Geneva
Switzerland

Subject: ***Application on Beyond Compliance: Integrated System Approach for Pest Risk Management in Southeast Asia***

Message *January 20, 2011*

Dear Mr. Spreij,

The Plant Protection Department being the National Plant Protection (NPPO) of Vietnam is pleased to participate in the above mentioned project proposal to develop the Systems Approach in Pest Risk Management in the SE Asia region.

We understood that this project can help export countries in the SE Asia region having more options on Pest Risk Management for opening new high markets for our agricultural and forestry products in the future. Application of Systems Approach will facilitate safe trade to, from and within the region.

Yours sincerely,

Dr. Hoang Trung
Deputy Director General
PPD-MARD

REPUBLIC OF INDONESIA
MINISTRY OF AGRICULTURE
AGENCY FOR AGRICULTURAL QUARANTINE

Gedung E Lt. 1,5 & 7
Kanpus Deptan
Jl. Harsono RM. No. 3 Ragunan
Jakarta Selatan 12550
email: caqsps@indo.net.id
Situsweb : http.//karantina.deptan.go.id

Telp. : (021)7816484
: 7816483
: 7816482
Fax : 7816481

Ref : 0385/KL.420/L.3/1/2011

28 January 2011

STDF Secretary
World Trade Organization
Centre William Rappard
Rue de Lausanne 154
CH-1211 Geneva
Switzerland

Dear Sir/Madam,

Developing trade opportunities: an integrated system approach for pest risk management

This is to confirm that Indonesia Agricultural Quarantine Agency (IAQA) as a contact point of the NPPO is interested in participating in the proposed activity as outlined in the above cited application.

Therefore, IAQA would fully supports this meeting to discuss these concepts and at the same time will also preparing proposal the larger project. We ask that your staff and the Working Group agree to the support requested.

Sincerely yours,

Arifin Tasrif
Director, Center for Plant Quarantine and Bio Safety.

CC. Director General of IAQA.

Australian Government

Department of Agriculture, Fisheries and Forestry

Mr Melvin Spreij
STDF Secretary
World Trade Organization
Centre William Rappard
Rue de Lausanne 154
CH-1211 Geneva
SWITZERLAND

Dear Mr Spreij

RE : **STDF Grant Proposal Beyond Compliance: Integrated Systems Approach for Pest Risk Management in Southeast Asia**

This is to show support by the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF) of the project proposal. The project would build on frameworks and methodologies outlined through the previous PPG project: Developing Trade Opportunities an Integrated Systems Approach for Pest Risk Management. Importantly, I think the project addresses the key issues of delivery and adoption for the use of a systems approach for trade and a practical way forward to underpin and make operational the concepts put forward in ISPM no.14: The Use of Integrated Measures in a Systems Approach for Pest Risk Management (FAO 2002).

Australia is continuing to actively progress the use of systems approaches to better value and consider the range of pest management activities which are performed through the whole of the food production and distribution system, to better define and mitigate the risk of pests being introduced through traded commodities. We have had previous interactions with this project's researchers and have worked on developing models to implement a systems approach and believe that the Bayesian Network and Control Point methodologies to be used offer an appropriate framework to develop and deliver functional systems approaches which could be used for market access. The pressure on maintaining traditional market access practices such as end-point chemical treatments is increasing as well as the need to value more effectively, appropriate investments made in pest management during production and distribution for underpinning market access. DAFF believes that this project would offer a significant contribution in being able to better use a systems approach in market access, for the benefit of Southeast Asian countries as International Plant Protection Convention and SPS members as a whole.

Yours sincerely

Lois Ransom

Chief Plant Protection Officer

2 February 2011

From: Robert.L.Griffin@aphis.usda.gov [mailto:Robert.L.Griffin@aphis.usda.gov]
Sent: 03 February 2011 21:29
To: Mumford, John D
Subject: Preliminary APHIS response to the STDF propopsal "Beyond Compliance"

John,

Many thanks for sharing the "Beyond Compliance" draft proposal for STDF. I am pleased to report our enthusiastic support.

Systems approaches are a key "growth area" for the phytosanitary community generally an APHIS in particular for several important reasons, including the need to identify alternatives to traditional risk management strategies such as methyl bromide fumigation. We also recognize that systems approaches create risk management opportunities that are more consistent with the SPS Agreement concept of "scalable measures" which have a rational relationship to the risk. As a result, we devote a considerable portion of our risk analysis resources to collecting and evaluating data that may be used to integrate measures for systems approaches. Interest in systems approaches and the implementation of systems approaches by the United States has increased so dramatically over the past decade that systems approaches have become more common than treatments as preferred mitigation strategies for many new import authorizations.

Although we consider the expansion of interest and implementation of systems approaches to be a very positive development overall, it is not without challenges. We continually encounter mistakes, ambiguities, and gaps in the global understanding of systems approaches, including in our own history with the concept. In this light, it is clear that efforts toward greater awareness raising and harmonization are sorely needed, especially as regards more technical aspects such as relevant statistical conventions. Developing a common understanding based on real-world applications has been important for us as we develop and evaluate increasingly more complex and diverse proposals for systems approaches. We therefore strongly agree with the focus on harmonization and the use of case studies in the STDF proposal and would be willing to provide support, including experts and information to assist with capacity building in this area.

We greatly appreciate the opportunity to review the proposal and look forward to further developments.

Robert L. Griffin
Director, Plant Epidemiology and Risk Analysis Laboratory
USDA, APHIS, PPQ Center for Plant Health Science and Technology
1730 Varsity Drive, Suite 300
Raleigh, North Carolina 27606-5202

Tel (919) 855-7512
Fax (919) 855-7477

APPENDIX 5: Capacity of supervising organisations

The Project Manager and other administrative activities will be housed in CABI Southeast and East Asia (CABI SEA), situated in Kuala Lumpur, Malaysia. Work Package Leaders for the Governance WP (Jon Knight, Imperial College London) and for the Technical Framework (Peter Whittle, Queensland University of Technology) also provide accountability on the project. Whilst Case Studies are the responsibility of each NPPO, they will be directly supported by the Technical Framework WP in particular. Regional Case Studies will be assisted by a CABI SEA technical expert (Ky Lum, supporting the study on import of palm oil plantings) and a regional expert on South American Leaf Blight (already identified but not yet contracted).

Further oversight is provided by the Project Steering Committee, including Ana Peralta of the IPPC Secretariat.

Details of technical capacity are shown in the CVs presented in Appendix 3.

CABI SEA Capability Statement

CABI Southeast and East Asia, situated in Kuala Lumpur Malaysia, works closely with a range of local and regional partners to addressing many important agricultural and environment issues in the region. One key area of work involves strengthening local plant health programmes and improving countries access to global markets. Activities include:

1. Over the last five years, CABI Southeast & East Asia (CABI-SEA) has worked collaboratively with regionally-active development assistance initiatives to deliver capacity building to ASEAN countries. These include the AusAID-funded SPS Capacity Builidng Program which is managed by the Department of Agriculture Fisheries & Forestry Australia (DAFF), the Plant Health component of the ASEAN-Australia Development Cooperation Program (AADCP) and the NZAID-funded Phytosanitary Project for CLMV Countries. In these collaborations, CABI SEA has delivered both organisational, logistical and technical resource in delivering training workshops in ISPM awareness, pest surveillance, pest risk analysis, diagnosis and taxonomic Identification of specific plant pests and diseases, management of pest and disease collections, etc.

2. Working with the Government of Malaysia, CABI-SEA has organized a number of workshops under APEC support on:
   a) Building Biosecurity Planning and Surveillance Capacity for APEC Member Economies (2005);
   b) Capacity Building in Surveillance and Diagnosis for Leafminer, Whitefly, Thrips and Mealybugs in Developing APEC Economies for Improved Market Access (2006) and (2007)
   c) Understanding and Developing Risk Management Options for Market Access (October 2008)
   d) Enhancing Food Security through a Regional Approach and Wide Stakeholder Participation to Plant Biosecuirty (2010)
   These workshops have been delivered to participants from APEC member economies, particularly those from the Asia Pacific region.

3. CABI SEA successfully secured support from IDRC to implement the project

"Knowledge Networks and Systems of Innovation to support Implementation of Sanitary and Phytosanitary Standards in the Developing Countries of Southeast Asia" in 2007 – 2008. The project identified the major constraints faced by developing countries in the region in their participation in the IPPC standard setting processes, and in implementation of ISPMs. IDRC has since given support to the establishment of an ASEAN Regional Knowledge and Diagnostic Network in a second project.

4. CABI-SEA continues to provide the technical support to ASEANET, the SE Asia LOOP of BioNET International (the Technical Secretariat of which is operated by the offices of CABI-SEA) to initiate and operate the ASEAN Regional Diagnostic Network (ARDN) clearing house. This network, which seeks regional sharing of plant pest diagnostic knowledge and resources, is now operating on a pilot basis, principally as a result of funding support from IDRC.

5. CABI-SEA staff has also undertaken consultancies as phytosanitary experts in ADB projects such as:
   a) RETA 6408: Support for CIQS in the Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area (BIMP-EAGA), and
   b) RETA 6450: Enhancing Transport and Trade Facilitation in the Greater Mekong Subregion

7. In Negara Brunei Darussalam, CABI SEA successfully tendered for, managed and completed three projects since 2004. These are:

   a) Reduction of Pesticide Residues in Economic Crop s through Intergated Pest Management (IPM) in Brunei Darussalam
   b) The Development of Viral Disease Identification and Management on Agriculture Crops and Ornamentals in Negara Brunei Darussalam, and
   c) The Development and Production of a Manual on IPM for Citrus in Negara Brunei Darussalam

   Three other projects have just been secured and are in the initial stages of implementation:

   d) The Development of Bacterial and Fungal Disease identification andn management on Agricultural Crops and Ornamental Plants
   e) Reduction of Pesticide Residues on Economic Crops through the Use of IPM Methods and Strengthening Capabilities in Insect identification and Collection
   f) Establishment of Plant and Animal Quarantine Services and Facilities in Brunei Darussalam

   Other major projects being implemented by CABI SEA are the ACIAR-funded projects:

   a) Improving cocoa production through farmer involvement in demonstration trials of potentially superior and pest/disease resistant genotypes and integrated management practices, and
   b) Incursion Prevention and Management of Coffee Berry Borer (CBB) in Papua New Guinea (PNG) and Eastern Indonesia (particularly Papua).

We believe that with our experience in plant health and phytosanitary work in the region, CABI SEA is well placed to play a key role in the implementation of the project

6th January 2011

STDF Secretary
World Trade Organization
Centre William Rappard
Rue de Lausanne 154
CH-1211 Geneva
Switzerland

Application on *Beyond Compliance: Integrated Systems Approach for Pest Risk Management in Southeast Asia*

Dear Mr Spreij,

The Southeast and East Asia Regional Centre of CAB International (CABI SEA) is pleased to participate in the above project proposal to develop the Systems Approach in Pest Risk Management in the SE Asia region. Located in Kuala Lumpur Malaysia, CABI SEA has for many years worked closely with international and regional development assistance agencies as well as national phytosanitary authorities to build plant health capacity in the region. We have similarly worked closely with the other partners in developing this project. We are convinced that this project can help to produce an improved regional approach to pest risk management, apply the systems approach, which will facilitate safe trade to, from and within the region.

Yours sincerely,

(Dr. Loke Wai Hong) Regional Director CABI-SEA

CABI South East Asia
Regional Centre,
PO Box 210,
43400 UPM Serdang,
Selangor, Malaysia

T: +60 (0) 3 89432921
F: +60 (0) 3 89426490

Centre for Environmental Policy
Silwood Park Campus
Ascot, Berkshire SL5 7PY
United Kingdom

Tel: +44 (0)207 5942206

j.mumford@imperial.ac.uk
www.imperial.ac.uk/environmentalpolicy
www.imperial.ac.uk/people/j.mumford

Professor J D Mumford
Director/Professor of Natural Resource Management

STDF Secretary
World Trade Organization
Centre William Rappard
Rue de Lausanne 154
CH-1211 Geneva
Switzerland

5th January 2011

Application on *Beyond Compliance: Integrated Systems Approach for Pest Risk Management in Southeast Asia*

Dear Mr Spreij,

The Centre for Environmental Policy at Imperial College London is pleased to join in this proposal to develop the Systems Approach in Pest Risk Management in the SE Asia region.

We have worked closely with the other partners in developing the project and have experience working with several of the partners on other projects as well. We strongly believe this project can help to produce an improved regional approach to pest risk management, apply the systems approach, which will facilitate safe trade to, from and within the region.

Yours sincerely,

Prof John Mumford

Queensland University of Technology
Faculty of Science and Technology

2 George Street GPO Box 2434
Brisbane Qld 4001 Australia
Phone +61 7 3138 2782 Fax +61 7 3138 2703
Email enquiry.scitech@qut.edu.au **www.qut.edu.au**

Mr Melvin Sreij
STDF Secretary
World Trade Organization
Centre William Rappard
Rue de Lausanne 154
CH-1211 Geneva
SWITZERLAND

10 January 2011

Application on ***Beyond Compliance: Integrated Systems Approach for Pest Risk Management in Southeast Asia***

Dear Mr Spreij

Queensland University of Technology is pleased to join in this proposal to develop the Systems Approach in Pest Risk Management in the Southeast Asia region.

We have worked closely with Imperial College London to develop this proposal and there is now a strong collaboration between ourselves and the countries which participated in the STDF-funded workshop in Kuala Lumpur in August 2010 (PPG-338). We are confident the project team has the mix of skills and experience to undertake the project successfully. The project will develop tools and skills which enhance SPS-capacity and will create new opportunities for safe trade in the region based on the systems approach to pest risk management. The Control Point-Bayesian Network method has the potential to overcome significant problems in developing and negotiating safe trade opportunities globally.

Yours sincerely

Professor Martin Sillence
Assistant Dean (Research)
Faculty of Science and Technology
Queensland University of Technology
GPO BOX 2434
BRISBANE QLD 4001
AUSTRALIA
Phone: +61- 7- 3138 2565
Email: martin.sillence@qut.edu.au

From: Robert.L.Griffin@aphis.usda.gov [mailto:Robert.L.Griffin@aphis.usda.gov]
Sent: 03 February 2011 21:29
To: Mumford, John D
Subject: Preliminary APHIS response to the STDF propopsal "Beyond Compliance"

John,

Many thanks for sharing the "Beyond Compliance" draft proposal for STDF. I am pleased to report our enthusiastic support.

Systems approaches are a key "growth area" for the phytosanitary community generally an APHIS in particular for several important reasons, including the need to identify alternatives to traditional risk management strategies such as methyl bromide fumigation. We also recognize that systems approaches create risk management opportunities that are more consistent with the SPS Agreement concept of "scalable measures" which have a rational relationship to the risk. As a result, we devote a considerable portion of our risk analysis resources to collecting and evaluating data that may be used to integrate measures for systems approaches. Interest in systems approaches and the implementation of systems approaches by the United States has increased so dramatically over the past decade that systems approaches have become more common than treatments as preferred mitigation strategies for many new import authorizations.

Although we consider the expansion of interest and implementation of systems approaches to be a very positive development overall, it is not without challenges. We continually encounter mistakes, ambiguities, and gaps in the global understanding of systems approaches, including in our own history with the concept. In this light, it is clear that efforts toward greater awareness raising and harmonization are sorely needed, especially as regards more technical aspects such as relevant statistical conventions. Developing a common understanding based on real-world applications has been important for us as we develop and evaluate increasingly more complex and diverse proposals for systems approaches. We therefore strongly agree with the focus on harmonization and the use of case studies in the STDF proposal and would be willing to provide support, including experts and information to assist with capacity building in this area.

We greatly appreciate the opportunity to review the proposal and look forward to further developments.

Robert L. Griffin
Director, Plant Epidemiology and Risk Analysis Laboratory
USDA, APHIS, PPQ Center for Plant Health Science and Technology
1730 Varsity Drive, Suite 300
Raleigh, North Carolina 27606-5202

Tel (919) 855-7512
Fax (919) 855-7477