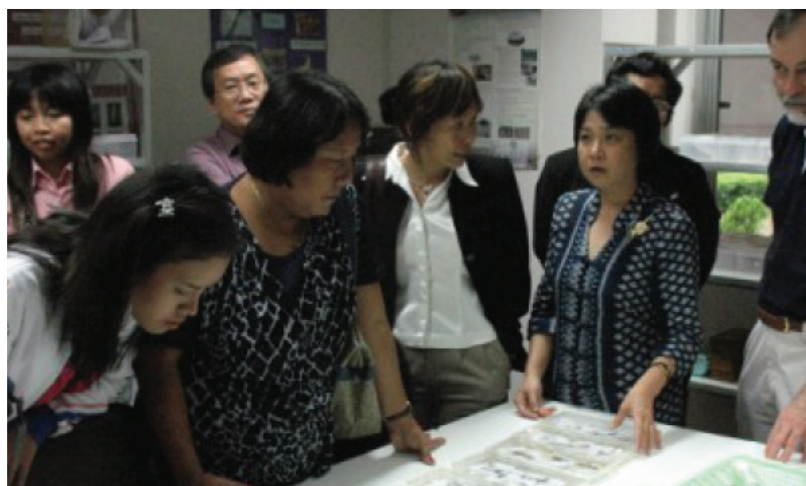


ACTIVITY COMPLETION REPORT



Sanitary & Phytosanitary Capacity Building Program

For
ASEAN MEMBER COUNTRIES

AusAID ACTIVITY 027K0F
RECORD OF UNDERSTANDING 12942

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1. GENERAL INFORMATION

Abbreviations and Acronyms

AADCP	ASEAN-Australia Development Cooperation Program
AANZFTA	ASEAN-Australia-New Zealand Free Trade Agreement
ABARE	Australian Bureau of Agricultural and Resource Economics
ACIAR	Australian Centre for International Agricultural Research
ACMECS	Ayeyawaddy-Chao Phraya-Mekong Economic Cooperation Strategy
ADB	Asian Development Bank
AFAS	Australian Fumigation Accreditation Scheme
AFTA-CER CEP	ASEAN Free Trade Area – Closer Economic Relations Closer Economic Partnership
AI	Avian Influenza
AMC	Australian Managing Contractor
APEC	Asia Pacific Economic Cooperation
APPPC	Asia and Pacific Plant Protection Commission
AQIS	Australian Quarantine and Inspection Service
ARDN	ASEAN Regional Diagnostic Network
ASEAN	Association of South East Asian Nations
ASEANET	South East Asian Loop of BioNET-INTERNATIONAL
ASWGC	ASEAN Sectoral Working Group on Crops
ASWGL	ASEAN Sectoral Working Group on Livestock
ATIGA	ASEAN Trade in Goods Agreement
AusAID	Australian Agency for International Development
AVA	Agri-Food & Veterinary Authority of Singapore
BA	Biosecurity Australia (within DAFF)
BARC	Brunei Agriculture Research Centre
BPI	Bureau of Plant Industry, Philippines
CABI	CAB International
CARD	Cooperation for Agricultural and Rural Development
CBD	Convention on Biological Diversity
CFP	Country Focal Point
CHAEC	Council of Heads of Australian Entomological Collections
CLMV	Cambodia, Lao PDR, Myanmar, Vietnam
CSF	Classical Swine Fever
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAALI	Department of Agronomy and Agricultural Land Improvement, Cambodia
DAFF	Department of Agriculture, Fisheries and Forestry, Australia (formerly AFFA)
DFAT	Department of Foreign Affairs and Trade (Australia)

DoA	Department of Agriculture
ECN	Entomological Collections Network
ELISA	Enzyme-linked immunosorbent assay
ERZDRIP	Emerging and Resurging Zoonotic Disease Regional Initiative Program
EU	European Union
EWGHPM	Experts Working Group on the Harmonisation of Phytosanitary Measures
FAO	Food and Agricultural Organization of the United Nations
FMD	Foot and Mouth Disease
GBIF	Global Biodiversity Information Facility
GMS	Greater Mekong Subregion
HLB	Huanglongbing, citrus greening disease
HPAI	Highly Pathogenic Avian Influenza
IAQA	Indonesian Agricultural Quarantine Agency
IPPC	International Plant Protection Convention
IRRI	International Rice Research Institute
ISPM	International Standard for Phytosanitary Measures
IPM	Integrated Pest Management
LBVD	Livestock Breeding and Veterinary Department, Myanmar
LIPI	Lembaga Ilmu Pengetahuan Indonesia (Indonesian Institute of Sciences)
MAFF	Ministry of Agriculture Fisheries and Forestry, Cambodia
MARD	Ministry of Agriculture and Rural Development, Vietnam
M&E	Monitoring and Evaluation
MoU	Memorandum of Understanding
MTM	Malaysia – Thailand – Myanmar (Peninsula)
MZB	Museum Zoologicum Bogoriense
NPD	National Phytosanitary Database
NPPO	National Plant Protection Organisation
NZAID	New Zealand Agency for International Development
NZAID PCBP	NZAID Phytosanitary Capacity Building Program in the Mekong Region
OECD	Organization for Economic Cooperation and Development
OCPPPO	Office of the Chief Plant Protection Officer (within DAFF)
OCVO	Office of the Chief Veterinary Officer (within DAFF)
OIE	<i>Office International des Epizooties</i> (the world organisation for animal health)
PCR	Polymerase Chain Reaction
PDD	Program Design Document
PRA	Pest Risk Analysis
PRRS	Porcine Reproductive and Respiratory Syndrome

PSLP	Public Sector Linkages Program
RCU	Regional Coordination Unit (for SEAFMDC)
RoU	Record of Understanding
SAHMBA	Strengthening Animal Health Management and Biosecurity in ASEAN
SEAFMDC	South East Asian Foot and Mouth Disease Control and Eradication Campaign
SOM-AMAF	Senior Officials Meeting – ASEAN Ministers of Agriculture and Forestry
SPA	Strategic Plan of Action
SPS	Sanitary and Phytosanitary (as in WTO Agreement on the Application of Sanitary and Phytosanitary Measures)
SPS CBP	Sanitary and Phytosanitary Capacity Building Program
STDF	Standards and Trade Development Facility
TMA	Technical Market Access
TTT	Train-the-Trainer
UPLB	University of the Philippines, Los Baños
USDA	United States Department of Agriculture
WES	Workshop Evaluation System
WHO	World Health Organization
WTO	World Trade Organization

Certification

This report has been completed in accordance with Record of Understanding, advice from the AusAID Activity Manager and AusGuideline, October 2005.

A handwritten signature in black ink, reading "Ian Naumann", with a long horizontal flourish extending to the right.

.....

Dr Ian Naumann
Director
SPS Capacity Building Program
October 2009

2. EXECUTIVE SUMMARY

The Australian Agency for International Development (AusAID)-funded, Sanitary and Phytosanitary Capacity Building Program (SPS CBP) was established with the goal of enhancing the capacity of Association of South East Asian Nations (ASEAN) countries to meet international standards consistent with the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures (WTO SPS Agreement). The Program's objectives were to: (i) increase understanding of, and support for, SPS issues; (ii) build capacity to construct national, plant pest lists and undertake pest risk analyses; and (iii) strengthen regional capacity in SPS measures to control trans-boundary, animal diseases.

Program Description

The Program was managed by the Office of the Chief Plant Protection Officer (OCPPO), within the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF), and implemented between late 2004 and mid 2009 with a budget of AUD\$4 079 600.

Activities

The program activities included: a study tour to Australia for senior officials; eight SPS awareness workshops; a workshop to develop plant health data standards and processes for data sharing; six plant pest and disease diagnostics training workshops, two mentoring visits, a strategic planning workshop for a proposed regional, four pest risk analysis training workshops, an animal trade study, two animal health research and training workshops; and series of four training workshops on advanced epidemiological skills for livestock disease specialists. Twenty five regional organisations and a total of 358 individuals took part in these program activities; 45 % of participants were women.

Key Outcomes and Major Outputs

The program generated many significant achievements from these activities at the ASEAN Regional level as well as at the national level. Selected, key outcomes and major outputs, aligned against design objectives, are as follows:

Objective 1 (SPS Awareness)

SPS booklets were produced as a plain-language guide to the SPS Agreement and published in five ASEAN languages.

Motivated by participation in the SPS CBP Study Tour of Australian biosecurity agencies, the Malaysian Director General of Agriculture pursued the establishment in 2008 of the Malaysian Quarantine Service (MAQIS).

Following the SPS CBP Study Tour, the Myanmar Director General of the Livestock Breeding and Veterinary Department and the Head of the Plant Protection Division both demonstrated clear, personal commitments to SPS and both directed additional, scarce resources to SPS-related areas.

Objective 2 (Plant Health)

High-quality microscopes and associated remote microscopy equipment were procured and provided to plant diagnostic laboratories in several of the participating ASEAN countries.

A strategic plan for an ASEAN Regional Diagnostic Network (ARDN) was developed and the concept was endorsed by the ASEAN Sectoral Working Group on Crops (ASWGC).

In both Cambodia and Indonesia, the General Directorates of Agriculture were upgraded with restructuring; both countries are reviewing their national quarantine laws.

Lao PDR established an SPS coordination office, formed an inter-departmental SPS committee and last year approved new Plant Quarantine Laws.

The Philippines has embarked on a national program of domestic 'SPS' training and capacity building using Philippines expertise and next year will begin a PhP 10 million upgrade of the quarantine/SPS laboratory network.

Thai national Agricultural Quarantine Import Conditions have been upgraded through a comprehensive, formal revision of Plant Quarantine Regulations and a restructure is planned to improve operational quarantine by moving the Plant Quarantine Research Group to the Agricultural Regulatory Division.

There have been substantial improvement in the standards of preparation and curation of pest and disease specimens in national reference collections and basic, pest risk analysis (PRA). The program has also taught regional trainers of PRA who are already actively educating others.

Objective 3 (Animal Health)

An epidemiological network (EpiNet) was established with defined membership, coordinator and agreed work plan. EpiNet is confirmed as an integral part of the Malaysia-Thailand-Myanmar (MTM) Foot and Mouth Disease (FMD) Program's strategic operations.

A study on the impact of animal movements on regional FMD eradication programs was undertaken and presented to the MTM Tri-state Commission.

An economic study of SPS barriers to trade in livestock products published and distributed to country participants. The study drew out important lessons for producers seeking to overcome SPS barriers.

A proposal for a major new, FMD program in Myanmar; and demonstration of FMD freedom in southern Myanmar.

A number of projects were undertaken throughout the region as result of the Animal Health training by AusVet Animal Health Services. Among these were Indonesian projects which delivered outcomes of practical value to an on the on-going brucellosis eradication program in Kalimantan, including the first complete risk analysis; Myanmar's projects targeted HPAI and had immediate impact on disease control policy in the form of a new animal health order requiring biosecurity actions at local level by divisional livestock officers; and one of the Philippines projects focused on a major, national, zoning plan for FMD on the island of Luzon.

Harmonisation of Activities

The Program was implemented in close collaboration with the New Zealand Agency for International Development Phytosanitary Capacity Building Program in the Mekong Region (NZAID PCBP), AusAID Public Sector Linkages Program (PSLP) and ASEAN-Australia Development Cooperation Program (AADCP) activities, and the *Office International des Epizooties* (OIE) FMD campaign in the MTM Tri-state Region.

Sustainability

Policy and regulatory changes in the majority of countries that participated in the Program and evidence of increasing resources for some SPS agencies augur well for the sustainability of Program benefits. Linkages established by the Program among regional institutions (e.g. research and SPS agencies), experts and ongoing, Australian-based programs (e.g. remote

diagnostics initiatives) will also contribute to sustainability. The Program has successfully developed regional training capacity in several key areas, e.g. pest risk analysis. Some Program outcomes, such as EpiNet have been incorporated into ongoing regional programs. The proposed, regional diagnostic network (ARDN) for plant health scientists will sustain diagnostic skills imparted by the Program. The ARDN concept has been endorsed by the ASWGC but will require medium-term, donor funds to establish a framework and induce participation by stronger countries. Informal, national and regional networks of reference collections cultivated by the Program could do much to sustain the Program's technical benefits to reference collections.

However, the costs of performing basic activities, such as surveillance and diagnostics, are a constraint for many countries and limit the application of skills obtained during the Program. Weak government revenues threaten sustainability in several countries. Anticipated Asian Development Bank (ADB) SPS initiatives in Cambodia, Lao PDR and Vietnam should support improvements in those countries, at least in the medium term.

Lessons learned

The SPS CBP was planned as a three-and-a-half year activity, but an additional year was required for delivery. This reflected the need to coordinate delivery with related donor programs, delays due to livestock disease outbreaks, and the limited absorptive capacity of smaller ASEAN countries. SPS capacity building is undoubtedly a long-term undertaking. SPS issues remain imperfectly understood in non-agricultural, ASEAN government agencies and in the private sector. A lack of resources in home institutions prevented some SPS CBP participants from fully applying new skills. Operational funds for surveillance, equipment, specialist literature and internet access were often limiting. The Program demonstrated that SPS-related, technical training calls for a mix of multi-country, single-country, stand-alone and integrated training activities, and that training is especially effective when workplace-based projects are included. The sustainability and efficiency of SPS training could be enhanced by incorporating training material into regional, university curricula and by the development of university facilities. Although diverse and substantial training in the investigation and management of livestock diseases has already been delivered in the ASEAN region, maintaining and upgrading skills among specialist and front-line animal health workers remains a priority. Potentially, there are areas of overlap between the plant and animal biosecurity programs of developed countries and SPS capacity building programs for developing countries; these commonalities should be taken into account in the design of future programs.

3. RECOMMENDATIONS

1. SPS capacity building programs should have an implementation period of at least five years. This may facilitate integration with projects targeting other constraints, such as production, transportation and marketing.
2. Program coordination can be based successfully on robust and shared needs assessments, good will and cross-representation on design, planning and implementation teams.
3. Program design should consider modest allocations to support activities such as surveillance and the purchase of essential, specialist equipment and literature.
4. Program design should consider including monitoring and evaluation sessions during the planning and inception phases of programs.
5. Program planning should takes into account national and regional priorities and programs. Ideally, organisations implementing capacity building can commit to long-term engagement with ASEAN agencies and mechanisms.
6. SPS programs should include a component to develop understanding of SPS topics and their relevance to trade. High priority should be given to workshops and seminars that are single-country and engage both the private sector and non-agricultural, government agencies. International seminars or workshops for Directors General and their advisors might also be useful at two- or three-yearly intervals.
7. SPS-related technical training should seek to develop an appropriate mix of multi-country, single-country, stand-alone and integrated workshops, and employ workplace-based project work where possible.
8. The sustainability and efficiency of SPS training could be enhanced by efforts to incorporate training material into regional university curricula and by support for the development of university facilities.
9. Efforts should be renewed to improve plant health information management in the region. This might include small-scale projects that progressively digitise surveillance data, validate identifications, incorporate biological data and images, consolidate data sets within countries, integrate data regionally, and respond to feedback from data users.
10. The plant pest and disease diagnostic impediment could be addressed by the establishment of an ASEAN Regional Diagnostic Network. This would link users of diagnostic services more effectively with providers and provide a framework for training users to perform routine identifications themselves, increasing the number of experts in the region and developing reliable, user-friendly diagnostic tools. A strategic plan for such a network is attached as Appendix J.
11. Capacity building in pest and disease diagnostics in the ASEAN region should seek commonalities with biosecurity-related programs in developed countries.

12. Consideration should be given to the design of a program to support ongoing surveillance for pests and diseases of high priority export crops.
13. Consideration should be given to national and regional activities to catalyse the development of informal networks of ASEAN reference collections.
14. Consideration should be given to supporting regional or single-country training in pest impact estimation and risk mitigation. Much use could be made of regional expertise and sessions dedicated to the sharing of recent market access experiences would be useful.
15. Research should continue to define the pattern and drivers of livestock movements in South-East Asia.
16. Consideration should be given to undertaking a pilot project in central Myanmar to investigate the feasibility of a large-scale, FMD management program in this area.
17. Opportunities should be explored to maintain and upgrade livestock disease skills among specialist and front-line, animal health workers.

4. DESCRIPTION OF ACTIVITY

Program Description

The Sanitary and Phytosanitary Capacity Building Program (SPS CBP) was established with the goal of enhancing the capacity of ASEAN countries to meet international standards consistent with the WTO SPS Agreement. The purpose of the Program was to expand the capability of these countries to describe and manage plant and animal health and to implement SPS measures consistent with international standards and the expectations of trading partners. The Program's high-level objectives were to:

- increase understanding of, and support for, SPS issues;
- build capacity to construct national pest lists and undertake pest risk analyses; and
- strengthen regional capacity in SPS measures to control trans-boundary animal diseases.

The Program comprised SPS awareness, plant health and animal health components, and consisted of:

- a study tour to Australia for senior officials;
- eight SPS awareness workshops;
- publication of a plain-language guide to the SPS Agreement and translation into five ASEAN languages (Bahasa Indonesia, Khmer, Lao, Thai and Vietnamese);
- a workshop to develop plant health data standards and options for data sharing;
- six plant pest and disease diagnostics training workshops;
- two mentoring visits;
- a strategic planning workshop for a proposed regional, diagnostics network;
- procurement of high-quality microscopes for several countries;
- four pest risk analysis training workshops;
- a trade study, including two research and training workshops;
- a series of four training workshops on advanced epidemiological skills for livestock disease specialists; and
- a set of 'case studies' that focused variously on three livestock diseases (FMD, CSF and PRRS) and the establishment of an epidemiological network.

Overall, 358 individuals participated in Program activities (Appendix G). Except for the study tour and part of the trade study, all activities took place in the ASEAN region. Ultimately, all countries hosted at least one activity. The Program targeted only seven of the 10 ASEAN countries (Cambodia, Indonesia, Lao PDR, Myanmar, Philippines, Thailand and Vietnam). However, because of the regional nature of the Program and the commitment of ASEAN members to inclusive activities, in practice most ASEAN countries participated in activities. Malaysia, Singapore and Brunei Darussalam did so at their own expense. A total of nine individuals from Australia, Bhutan, India, Japan and Taiwan participated in Program activities using independent funding.

The Program was established through a Record of Understanding (RoU) between AusAID and DAFF ('the Australian Managing Contractor', AMC) and a series of agreements between AusAID and each participating country. The Program Design Document (PDD) was completed in November 2003 and the RoU between AusAID and DAFF was executed in 2004. Program activities commenced late in 2004. A no-cost extension to the Program was agreed in 2008. A 'Mid-Term' Review was undertaken in March 2008. Formal completion

date was 30 June 2009. A comprehensive list of activities and dates is provided in Appendix B.

Funding of approximately A\$3.8 million was specified in the AusAID-DAFF RoU. This was subsequently supplemented by transfer of residual AusAID ('ERZDRIP') funds held by DAFF for emerging infectious disease work. In June 2009 \$150 000 was transferred directly from AusAID to purchase equipment. DAFF also contributed salaries for the Program Director and Program Coordinator for one year, and for additional support staff as required.

Funding	\$ Amount
Initial approved budget (AusAID)	3 874 600
Transfer from ERZDRIP (AusAID/DAFF)	55 000
Additional funding for equipment purchase (AusAID)	150 000
Total	\$4 079 600

The Program was implemented by a management team within DAFF's Office of the Chief Plant Protection Officer (OCPPO), comprising a Program Director, Program Coordinator and Financial Officer. Three committees assisted Program delivery:

- a committee of Country Focal Points (CFPs), representing each ASEAN country;
- a Technical Advisory Group within DAFF; and
- a High-Level Steering Committee (comprising Senior Executive Service officers and senior managers of four DAFF Divisions – Trade and Market Access, Biosecurity Australia, AQIS and Product Integrity Animal and Plant Health).

The AusAID-DAFF RoU provided clarity, and specified roles and responsibilities, with the AMC responsible for most management tasks. The management team prepared Annual Plans in consultation with CFPs and each Plan was endorsed by the CFP committee, the DAFF Steering Committee and AusAID. DAFF line management systems ensured appropriate governance for program delivery. DAFF financial systems, Chief Executive Instructions, travel protocols, contracting and procurement guidelines were adopted. Members of the Technical Advisory Group were called upon as required for specialist input on plant and animal health matters. The DAFF Steering Committee ensured that activities matched overall Program objectives and that each Annual Plan was consistent with DAFF portfolio objectives.

Management arrangements were sufficiently flexible. For example, the Technical Advisory Group was called upon as required, but arrangements did not preclude the management team seeking specialist advice from further afield. The PDD did not encourage significant variation to original high-level Program structure but did allow flexibility in the selection of individual activities each year. With 10 countries effectively participating, major redesign of the Program would have invited considerable challenges.

The Program's goal, purpose and objectives proved durable and appropriate. The plant pest and disease diagnostic component was augmented with mentoring, project work, provision of microscopes, and a workshop to plan a regional, diagnostic network. The livestock trade study was modified to emphasise benefit-cost analysis.

Program expenditure is summarised in Appendix C. Cost estimates in the PDD generally were reasonably accurate, but the management team was able to achieve savings by negotiation of consultancy rates, by calling upon DAFF expertise, and through the use of offshore providers (e.g. to purchase air tickets). The PDD significantly underestimated the costs of securing the

services of high-calibre, livestock disease experts. Travel costs fluctuated notably over the life of the Program especially prior to and after the Global Financial Crisis.

The need to coordinate the planning and delivery of the Program with other donor programs was anticipated in the PDD but no mechanisms were specified for this. The management team participated in planning and review for NZAID PCBP and AADCP activities, and was closely involved with companion bilateral projects, especially projects funded under the AusAID PSLP and by the Australian Centre for International Agricultural Research (ACIAR). Coordination challenges and the limited absorption capacity of smaller countries were important factors in extending the delivery of the anticipated three-and-a-half-year Program by approximately one year.

The Program was loosely linked to ASEAN which provided budgetary flexibility and more direct ownership by national agencies. Reporting to the ASWGC proved satisfactory, although the Program was not a formal 'ASEAN' activity. Communications with the ASEAN Sectoral Working Group on Livestock (ASWGL) were necessarily less frequent, reflecting the smaller number and longer duration of animal health activities. CFPs were very senior managers, which enabled good inter-program coordination as these senior officials were commonly focal points for other donor programs. A consequence of having heavily committed senior officials as CFPs was that occasionally communications were slow. Invitations to activities and nominations all passed through the CFPs. Because of genuine need, familiarity and convenience nominations often came from the CFP's own organisation.

Individual workshops and projects were implemented under a series of contracts with specialist consultants (mostly Australian public sector organisations), counterpart organisations and private sector providers. In many cases workshop logistics and training were implemented by or through the regional, non-government organisation, South East Asian Loop of BioNET-INTERNATIONAL (ASEANET), based in Serdang, Malaysia. Minor funds were transferred to counterpart Government agencies, largely for training and other implementation costs prescribed in contract budgets. Major procurement was undertaken by the AMC.

Counterparts contributed to the Program, especially through providing salaries, workshop venues and equipment; other donor programs co-funded specific activities (e.g. two workshops and mentoring in the plant pest diagnostics component of the Program; FMD-related activities in Myanmar, Thailand and Malaysia) but, in general, funds were not pooled.

Initially, the plant health component of the Program did not provide for the procurement of major equipment. Microscopes in most plant health laboratories in the ASEAN region are inadequate for modern diagnostics. Many laboratories have poor facilities for the storage of specimens. Specialist literature is also limiting. The lack of a significant procurement budget was a flaw in the original Program Design. The Program also assumed that a parallel, plant health project in the AADCP would support surveillance and additional, substantial, diagnostic training support. In reality, the AADCP project was resourced to support only limited surveillance and the anticipated, high-quality, diagnostic manuals generally were not published. Additional resources would have been welcome in the SPS CBP to prepare modest print-runs of diagnostic manuals.

The interplay of animal health objectives anticipated in the Program Design was logically sound but proved impracticable. Data were not available to conduct the trade study to the

level anticipated. The trade study was intended to provide guidance for the selection of case studies, but ultimately had little influence over this selection. Priorities for case studies emerged from direct consultation with CFPs, senior regional livestock disease managers and the OIE SEAFMD Regional Coordination Unit. The training in epidemiological skills required for developing zoning strategies was highly relevant to regional needs, but because of timing it was impossible to incorporate SPS CBP case studies in the training. Nevertheless, this training was very successful in incorporating disease case studies from the workplace, especially from avian influenza operations that had been funded principally by other donor programs.

In general the logframe was clearly expressed. However, some modification was achieved firstly through a Monitoring and Evaluation review in May 2007 and then during the preparation of the Program's Evaluation Plan in late 2008.

From the outset, improvement in technical capacities were deemed to be highly likely, with flow-on benefits to production agriculture and trade. Actual monetary benefits were difficult to quantify, given the range of factors influencing trade in agricultural commodities. It was recognised that it was unrealistic to expect to see an impact of the Program on trade statistics over the term of the Program. It was also recognised that SPS measures would not be the only constraints and private sector weakness was highlighted.

Background

Rationale and ASEAN priorities

In most of the developing countries of the ASEAN region, the majority of the population is rural or dependent on agriculture. Development of the agriculture sector in these countries is essential to obtain food security, a reduction in poverty and sustainable growth. Even in the most-developed ASEAN countries, agriculture still plays a major role in the national economy. Many ASEAN countries have sought to take advantage of increased demand for agricultural commodities and of high-value markets but have been constrained by an inability to comply with Sanitary and Phytosanitary (SPS) requirements. Of course, pest and disease (SPS) constraints are not the only limiting factors for agriculture and livestock industries in the ASEAN region. It was always beyond the resources of the SPS Capacity Building Program to deal with all of these constraints or with the challenge of comprehensively building the capacity of institutions with SPS responsibilities.

Overcoming SPS barriers is a major contribution to the economic integration and development envisaged under the 2007 ASEAN Charter. The Charter explicitly requires 'harmonisation' of SPS measures and identifies Food, Agriculture and Forestry as a 'priority integration sector'. The Strategic Plan of Action (SPA) on ASEAN Cooperation in Phytosanitary [Measures] (2005 – 2010) also calls for harmonisation of phytosanitary measures, compliance with WTO/SPS requirements, strengthening of national pest risk analysis frameworks, and biosecurity planning. The draft ASEAN Trade in Goods Agreement (ATIGA) and the ASEAN Australia New Zealand Free Trade Agreement (AANZFTA) both include SPS chapters and the work program proposed under the AANZFTA calls for capacity building along the lines of the SPS CBP. These regional strategies and Agreements provided a policy environment that encouraged commitment to the SPS CBP by ASEAN countries.

Article 9 of the SPS Agreement requires developed countries to provide technical assistance to developing countries in relation to SPS measures. In 2001 Australia included SPS capacity

building in ASEAN countries in the work program of the AFTA-CER Closer Economic Partnership, resulting in the Program described below.

Interplay of SPS CBP and related capacity building in ASEAN region

SPS-related assistance has been provided to the ASEAN region on both a regional and on a bilateral basis. Australia, Canada, the European Community and its member countries, Japan, the USA and Norway all have been prominent donors (Ignacio, 2007). Some donors have been more conspicuous in particular areas. For example, Australia has been particularly active in plant and animal health and the USA and Japan in the area of food safety.

The size of recent animal health SPS assistance dwarfs assistance to the plant health area largely because of major investments in Highly Pathogenic Avian Influenza (HPAI) programs (Ignacio *l.c.*). These programs have considerably strengthened veterinary agencies in the ASEAN region, e.g. through the upgrading of diagnostic laboratories and improvement of surveillance and response systems. This provides some confidence that epidemiologists trained during the SPS CBP will have access to data, and that their disease management recommendations can be implemented. A comparison of the value of SPS assistance by theme for Cambodia, Lao PDR and Vietnam is indicative of the disproportionate flow of SPS assistance. For these three countries, between 2001 and 2006, approximately US\$135 million was provided for food safety projects, US\$24 million for animal health and a further \$90 million for Avian Influenza (AI), US\$14 million for plant health and US\$53 million for 'general' SPS projects. These figures reveal that the SPS CBP has been implemented against a backdrop of relatively poor plant health infrastructure.

Multi-country, SPS assistance programs are common, encompassing, for example, either ASEAN members, Asia Pacific Economic Cooperation (APEC) economies, the countries of the Greater Mekong Subregion (GMS) or the CLMV countries (Cambodia, Lao PDR, Myanmar and Vietnam). Australia has been among those donors providing multi-country, multi-year assistance, such as through the long-running FMD program in the MTM region and the AADCP. Each of these complemented the SPS CBP. The FMD program provided a framework for several SPS CBP case studies and the SPS CBP provided epidemiological advice to the FMD program. The AADCP included a project entitled 'strengthening animal health management and quarantine', which focused on surveillance, diagnosis and information management, and established a database (Strengthening Animal Health Management and Biosecurity in ASEAN, SAHMBA) for recording animal disease data in each country. This AADCP project thus provided infrastructure for use by epidemiologists trained by the SPS CBP. HPAI programs have provided infrastructure, complementary training in epidemiology, and case studies for use in SPS CBP training. The AADCP also supported plant health surveillance, which was a 'missing' element from the SPS CBP, and the SPS CBP provided the AADCP with data management and diagnostic training.

There have also been a number of single-country, SPS-related projects in the ASEAN region. For example, Australia has supported short-term, single-country, assistance projects, with Thailand, Indonesia and the Philippines, often under the auspices of bilateral, agricultural cooperation or free-trade agreements. These filled some of the 'in-country' gaps evident in the SPS CBP. Japan has supported a longer term, single-country, quarantine project with Vietnam. In targeting border inspection and treatment capabilities this program allowed the SPS CBP and other programs to focus on pre- and post-border capacities.

Individual ASEAN countries have participated to differing extents in SPS capacity building. For example, an analysis of SPS assistance to Cambodia, Lao PDR and Vietnam for the period 2001-2006 revealed that Vietnam received over US\$150 million in aid, compared to Cambodia and Lao PDR, neither of which received more than US\$20 million (Ignacio, 2007). It is no surprise that SPS CBP trainees from Cambodia and Lao PDR have had the poorest physical facilities with which to apply newly acquired skills.

SPS assistance has tended to favour government agencies with direct SPS responsibilities. Universities have benefited to a much lesser extent and one consequence is that donor programs continue to provide training that might reasonably be considered part of national, tertiary training.

The NZAID PCBP has focused on the CLMV countries. The first phase of this Program provided a National Phytosanitary Database (NPD). The second phase has supported a series of surveillance and diagnostics training activities, and has provided some equipment. It is also looking to redevelop the NPD to provide National Plant Protection Organisations (NPPOs) with greater technical control and flexibility and to promote skills in preparing market access applications. By strengthening the CLMV countries, the NZAID Program 'buttressed' the potentially weak flank of the SPS CBP's regional activities.

In recent years DAFF has managed an International Agricultural Cooperation Program which has supported a number of small, often single-country, short-term activities (e.g. strengthening of operational quarantine skills in Indonesia). From time to time DAFF has delivered Master Classes in trade policy and biosecurity. These Master Classes have complemented SPS CBP awareness workshops by providing much more intensive exposure to topics such as trade law and negotiating market access. The ongoing Australian Fumigation Accreditation Scheme (AFAS) is a notable, larger and longer-term program. AFAS has provided training in fumigation best practice and accreditation for the benefit of Indonesia, Thailand, Vietnam, Malaysia, the Philippines, Cambodia and Lao PDR (as well as China and India, among ASEAN's near neighbours). The existence of this program has freed the SPS CBP of the need to focus on the technical aspects of border treatments.

ACIAR has supported a number of research and development projects relevant to SPS in the ASEAN region. These have included projects on plant pathology in Cambodia, work on *Phytophthora* diseases, fruit fly management projects in Vietnam and Indonesia, and a new passion fruit project in Indonesia. A current project brings together several Australian organisations and the Department of Agriculture (DoA) in Thailand to develop diagnostic tools and capacity; the project includes the introduction of remote diagnostics technologies (see <http://www.aciar.gov.au/>). The last-mentioned is directly supportive of SPS CBP training in diagnostics.

It should also be noted that several projects have been implemented by some ASEAN countries for the benefit of other ASEAN countries. For example, Malaysia has initiated and hosted workshops on risk mitigation and biosecurity planning and Thailand has initiated the Ayeyawaddy-Chao Phraya-Mekong Economic Cooperation Strategy (ACMECS). The Malaysian risk mitigation initiative in particular provides a vehicle for carrying forward SPS CBP phytosanitary risk analysis training.

Currently, and with interest from the ADB and the World Bank, an integrated, SPS capacity building action plan for the GMS (i.e. southern China, Lao PDR, Vietnam, Cambodia,

Thailand and Myanmar) is under development. This holds considerable promise for continuing the work of the SPS CBP and NZAID Programs in these countries, especially regarding pest and disease surveillance and diagnostics.

Some other projects implemented in the ASEAN region have less obvious but significant SPS aspects. For example, a forest health project under the AusAID-funded Cooperation for Agricultural and Rural Development (CARD) Program is developing a forest health surveillance network in Vietnam and will feed pest and disease data to the Vietnamese NPPO.

5. EXIT ARRANGEMENTS

Australian Managing Contractor Staff

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DAFF Technical Advisory Group

Drs Peter Black, Jacek Plazinski and Cheryl McRae; Ms Lois Ransom
Department of Agriculture, Fisheries and Forestry
GPO Box 858 Canberra ACT 2601 Australia

Country Focal Points

See 'Appendix D – CFP List'.

Key documents

See 'Appendix E – Activity Reports' for (a) list of Annual Operational Plans, Six-monthly and Annual Reports; and (b) Program publications comprising: a set of three volumes dealing with livestock disease management; booklets (in English and regional languages) describing the SPS Agreement; an economic study on barriers to ASEAN meat exports; and a summary paper based on this meat export research. All other unpublished, workshop reports and Program records are subject to standard Australian Government records protocols and are held in hard and electronic form by:

Department of Agriculture, Fisheries and Forestry
GPO Box 858 Canberra ACT 2601 Australia.

Physical assets

See 'Appendix F – Equipment Procurement List' for a tabulation of microscopes, digital cameras and remote microscopy units purchased/ordered and agencies to which ownership has been or will be transferred.

Contractual obligations

Contractual obligations between the AMC and other parties at the formal end of the Activity cover the following:

Arrangement	Completion date	Status
Printing of additional quantities of the booklet describing the SPS Agreement (SPS CBP Activity 1.1.3)	December 2009	Underway
Development of zoning strategies for CSF and PRRS in Cambodia, Vietnam (SPS CBP Activity 3.3.9)	December 2009	Underway
Procurement of microscopes and digital cameras (SPS CBP Component 2)	December 2009	Underway
Development of an expertise register in support of the proposed ASEAN Regional Diagnostic Network (SPS CBP Component 2)	February 2010	Under negotiation
Collection of samples for DNA barcoding (SPS CBP Component 2)	February 2010	Under negotiation

In addition, the AMC will report on Program completion to the ASWGC and the ASWGL in 2010.

Program activities to be carried forward

Plant pest and disease diagnostics – SPS CBP Component 1

- OCPPO, ASEANET and the NZAID PCBP will continue to undertake strategic and operational planning and seek funding for the proposed ASEAN Regional Diagnostic Network (ARDN).
- OCPPO and the Australian-based Cooperative Research Centre for Plant Biosecurity will continue to develop remote diagnostics technologies.

Plant pest and disease reference collections – SPS CBP Component 2

- OCPPO will continue to assist strategic development of reference collections and upgrading of technical skills in Indonesia and the Philippines.

Pest risk analysis – SPS CBP Component 2

- OCPPO will continue to develop and deliver risk mitigation training material.

EpiNet – SPS CBP Component 3

- EpiNet has been integrated into the work of the SEAFMD MTM Tri-state Commission.

Epidemiological training – SPS CBP Component 3

- AusVet Animal Health Services will develop a manual for front-line, animal health officers.

Swine disease zoning strategies – SPS CBP Component 3

- The Departments of Animal Health and Production (Cambodia) and Department of Animal Health (Vietnam) will continue surveillance and analytical work to develop zoning strategies for CSF and PRRS in adjacent provinces of Cambodia and Vietnam.

6. ACTIVITY SUMMARY

Relevance to AusAID's regional strategy

AusAID's Strategy for the Asia Regional Development Cooperation Program for the period 2001-3 had the broad objective of advancing Australia's national interest by assisting developing countries in East Asia to reduce poverty and achieve sustainable development and sought to achieve this by tackling trans-boundary development challenges and strengthening regional cooperation and economic integration. The SPS CBP supported the Strategy by: addressing regional integration of the new and relatively poorer ASEAN countries (by focusing on SPS barriers to trade); engaging the more developed ASEAN countries in the delivery of regional development programs (e.g. by inviting Brunei, Malaysia, Singapore and Thailand to host and deliver training); building human capacity and strengthening regional institutions in program delivery (e.g. by engaging ASEANET to organise and deliver training); supporting Australian engagement in the region (through the use of Australian, public sector experts); providing regional responses to SPS issues, and establishing links with bilateral programs.

The Program also aligned well with the Asia Regional Engagement Strategy for 2009-15 (AusAID, 2009). The SPS CBP adhered to the three 'Guiding Principles' of this Engagement Strategy (by addressing ASEAN economic integration, the risk of transboundary movement of pests and diseases, and Millennium Development goals 1 and 8) and contributed to the 'Priority Outcomes' of the Strategy (by working through ASEAN institutions, by maintaining Australia's role and influence, and by building sustainable partnerships).

Country-level improvements in SPS Capacity

It is not difficult to identify improvements in SPS awareness and technical capacity in the ASEAN countries that have taken part in the SPS CBP. Figure 4 (Appendix H) suggests that the impact of the SPS CBP on individuals has been significant but it is challenging to describe specific cause-and-effect relationships between SPS CBP outputs and these improvements. The following summary is based largely on data in Appendix A, which in turn draws upon Program records, Six-monthly and Annual Program reports, an AMC Evaluation Survey undertaken during late 2008-early 2009, and a range of external sources.

It has always been understood that it was unlikely that trade and other economic data would reveal benefits during the life of the SPS CBP. These benefits are long-term goals and dependent on many factors external to the SPS CBP. It is encouraging to note that between 2002 and 2007, the value of exports of agriculture, food and forest products from the Greater Mekong countries, which comprise a subset of the countries taking part in the SPS CBP, increased by an average 110%. Indeed, intra-regional trade has grown at a faster rate than the global average. However, the increasing importance of SPS barriers is indicated by the fact that the percentage of quarantine-sensitive, SPS products among exports to OECD countries has declined (van der Meer *et al.*, 2009).

The number of bilateral quarantine agreements involving ASEAN countries, either operational or under negotiation is an indicator of market access success. In general, over the past four years, the number of these agreements has tended to remain static or increased by only one or two per country. The exceptions are the Philippines (operational agreements up

by 7), Thailand (agreements up from 4-6 to more than 10) and Vietnam (agreements up from 4-6 to 7-10).

An indicator of SPS awareness and technical capacity is the extent to which a country participates in international standards setting processes. Figure 5 (Appendix H) reveals consistent participation by Thailand, increasing participation by Indonesia, Lao PDR, Malaysia, the Philippines and Vietnam, and that several ASEAN countries are now as active in the standard setting process as Australia, China, Japan and New Zealand.

Figures 10, 25, 27 (Appendix H) estimate the overall impact of the SPS CBP on institutional SPS capacities. Program participants generally rated the SPS CBP as contributing strongly to their ability to perform their work (Figure 4) but reported more mixed use of skills (Figure 24, Appendix H). The latter may echo the frustrations expressed by many workshop participants that they were unable to use skills because of lack of equipment, pest lists, etc. Workshop participants mostly reported that they shared workshop materials, such as manuals, with their colleagues (Figure 6, Appendix H), indicating flow-on training. However, on several occasions senior managers requested that additional copies of manuals and other workshop resources be provided for deposition in agency or laboratory libraries.

Cambodia

The General Directorate of Agriculture was upgraded in 2008 and the NPPO reorganised with the creation of a new Department of Plant Protection and SPS. New Quarantine laws are under consideration. A plan has been prepared to set up regional SPS Divisions within Cambodia under direct control of the Department of Plant Protection and SPS. The Department is seeking resources from the Cambodian Government to achieve this over a 5-year period. Inter-departmental, SPS Committees (both high level and technical) have been established by the Cambodian Government to achieve coordination across Departments with SPS responsibilities (Plant Protection, Animal Health and Production, Fisheries Administration). These strategic initiatives include strong leadership by alumni of the SPS CBP study tour.

At the operational level, it is encouraging to note that a new Sub-decree enables plant quarantine inspectors to be deployed to land and sea checkpoints after a long period when there was no plant quarantine inspection. Also, the numbers of village-level, animal health ‘paraprofessionals’ are increasing, as is their role in implementing SPS measures. The Government has built a major, new, plant protection laboratory complex in Phnom Penh. Discussions have been initiated between AQIS and General Directorate of Agriculture towards a project proposal to AusAID that would install modern, quarantine infrastructure in Cambodia.

Indonesia

As in Cambodia, the Directorate General of Agricultural Quarantine has been upgraded with accompanying increases in operational resources and restructuring of plant and animal health stations. The Government of Indonesia is reviewing the national Quarantine Legislation and has revised the Australia-Indonesia Agriculture Cooperation MoU to increase emphasis on SPS issues. The Director General of the Indonesian Agricultural Quarantine Agency (IAQA) contributed directly to the development of SPS work plans and strongly emphasised SPS issues during bilateral Working Group Meetings on Agriculture and Forestry with Australia. There has also been increased coordination among the Directorates of Food Crops,

Horticulture, Estate Crops and quarantine, which was one of the core ‘messages’ of SPS CBP awareness activities.

The Government of Indonesia has provided resources for the construction of a very large, new quarantine training facility in Jakarta, and the Quarantine Agency has requested the AMC to explore opportunities for using this as a regional, training resource.

The SPS CBP has been successful in entraining specialist expertise from the Indonesian scientific research agency, Lembaga Ilmu Pengetahuan Indonesia (Indonesian Institute of Sciences (LIPI) for SPS-related training. The strengthening of the LIPI-IAQA partnership is a welcome outcome of the SPS CBP and parallel, bilateral projects between DAFF and IAQA.

Lao PDR

Lao PDR has adopted national approach to developing SPS capacity by establishing an SPS coordination office that includes SPS CBP-trained representatives from DoA, the formation of an inter-departmental SPS committee (which includes representatives from SPS technical areas) and through new Plant Quarantine Law approved by the National Assembly in 2008. New Veterinary laws are also now in place. In 2006 the Government endorsed a national SPS Action Plan. The SPS CBP and the NZAID PCBP have both assisted the Plant Protection Centre at Salakham to become a functional, technical support facility. It is also encouraging to note the initiative of SPS CBP and NZAID workshop participants to prepare a new plant protection curriculum for the National University of Lao.

Malaysia

The recently retired Director General of the DoA and the SPS CBP CFP have driven the reorganisation of the NPPO and the establishment in 2008 of the Malaysian Quarantine Service (MAQIS) along the lines of the Australian agency, AQIS. New plant quarantine legislation is in draft form. The details of these strategic changes reflect the influence of the SPS CBP, including the Study Tour to Australia. The Malaysian Government has also allocated major, new resources to upgrade SPS-related technical areas within the Department. These include purchase of vapour heat treatment facilities, establishment of export centres for treatment of fruit and vegetables, and the establishment of the Repository and Culture Collection Centre as a reference centre for pests and beneficial organisms. Three new treatment accreditation and assurance schemes closely reflect the DAFF approaches to accreditation. Malaysia has also formed a national committee on Invasive Alien Species, conducted an invasives awareness seminar, and held a workshop to identify the top ten priority invasive species for Malaysia.

Myanmar

The Director General of the Livestock Breeding and Veterinary Department (LBVD) and the Head of the Plant Protection Division have directed additional, scarce resources to SPS-related areas, and both have demonstrated clear, personal commitments. Both were active participants in the SPS CBP Study Tour. The Government of Myanmar has provided resources for the expansion and upgrading of plant health laboratories at Insein, Yangon.

Surveillance for FMD in southern Myanmar, made possible by the SPS CBP, has provided Myanmar with the basis for negotiating live cattle trade with Malaysia in the MTM region.

Philippines

There has been a notable resurgence in SPS-related strategies and capacities in the Philippines despite severe economic constraints. These reflect strong, national commitment and stimulus from donor programs, including those from Korea, USA, Australia [AusAID, DAFF (AFAS)], the International Plant Protection Convention (IPPC), the Asia and Pacific Plant Protection Commission (APPPC), APEC and China.

The DoA has embarked on a national program of domestic 'SPS' capacity building. Initial emphasis was placed on training, using Philippines expertise, e.g. from the University of the Philippines, Los Baños (UPLB). The focus has now shifted to developing specific commodity capabilities for individual ports. In 2007 the Department began an internal evaluation of the quarantine/SPS laboratory network. In 2010-11, the Department will begin a PhP 10 million upgrade of these laboratories. The Bureau of Plant Industry (BPI) has secured significant extra space by taking over a former Food and Agricultural Organization of the United Nations (FAO) Building and will use this to improve the accommodation of the pest and disease reference collections and associated research staff. A new Plant and Environmental Health Division has been created at the Crop Protection Cluster, UPLB. Because of HPAI, resources have been provided to upgrade livestock disease, diagnostic laboratories to international standards (e.g. through acquisition of real time polymerase chain reaction (PCR) capabilities). Biosecurity levels of laboratories have been upgraded to handle diseases other than HPAI. A web-based, reporting system has been instituted. Several livestock disease laboratories have achieved or are working towards international accreditation.

Recruitment to Philippines Government agencies has been severely constrained by financial restrictions. The Agriculture Secretary has been supportive of the need to replace retiring staff but financial agencies have not been so sympathetic. The plant health area has achieved an increase of about 30 persons per year, principally through engagement of contract staff. Animal health agencies have increased the amount of work outsourced to private veterinarians. There has been no net staff increase in SPS policy areas.

The Philippines has developed a major proposal for upgrading of technical capabilities of quarantine inspection services. The DoA has also commenced a major, area freedom project to facilitate mango exports.

There have been no changes in national legislation relating to plant health. However, senior DoA officials are keen to harmonise SPS requirements across all regulatory agencies within the Department.

Philippines participation in IPPC standard setting has increased markedly. The Philippines has commented on most or all draft standards published during the past two years, is now a member of the IPPC Strategic Planning Group and the IPPC Working Group drafting revisions of International Standard for Phytosanitary Measures (ISPMs) 7 and 12, takes part in annual IPPC meetings, and participates in the WTO STDF (Standards and Trade Development Facility). The number of operational quarantine agreements agreed has increased (by about 7) and the number of agreements under negotiation has increased from '4-6' to 'more than 10'.

Thailand

Thailand's notable improvements in SPS awareness and capabilities have been driven largely by domestic initiatives, a handful of bilateral, donor projects, the AADCP and the SPS CBP.

The national Agricultural Quarantine Import Conditions have been upgraded through a comprehensive, formal revision of Plant Quarantine Regulations. The Thai DoA is now looking to integrate quarantine functions through an internal restructure that would move the Plant Quarantine Research Group to the Agricultural Regulatory Division and thus closer to operational quarantine.

The Thai Government clearly is providing resources for SPS-related work areas. Surveillance (for plant pests, diseases, weeds) is now a formal Thai DoA project implemented by various groups within the Department with a routine, annual budget allocation. The laboratories of the Plant Pathology Group have been renovated and upgraded. Plans have been drawn up for a new building to accommodate expansion of the entomological collection and to provide new laboratories for research staff. Additional resources have been made available to address emerging SPS-trade issues (e.g. mango seed weevil in 2008) and these have been pursued through avenues opened by the SPS CBP. Funding has been approved for a biosecurity laboratory for HPAI-related work at Kasetsart University. Six 'walk-in' biosecurity containers and diagnostic equipment has also been provided to the livestock disease group.

The Plant Quarantine Group of the DoA has successfully developed a new plant pest and disease diagnostics project with ACIAR and the Livestock Disease Department has applied to the STDF for funds for compartmentalisation studies and for funds to assist Thailand meet OIE standards. However, several technical areas report that they are increasingly seeking resources domestically and making fewer applications for international, donor funds.

Thailand is very active on the international, SPS 'stage'. The number of operational quarantine agreements has increased from '4-6' to 'more than 10', although the number of agreements under negotiation has remained the same ('1-3'). Most Thai DoA Groups indicated that they participate in international standard-setting, either by commenting on draft ISPMs or participation in international meetings where standards are discussed. IPPC records confirm Thailand's sustained commitment in recent years to the ISPM-setting process.

Staffing levels have remained constant in plant pathology and entomology groups relevant to SPS. However, recruitment of younger graduates to replace retiring senior staff has been noted. Remarkably, the Plant Quarantine Research Group (which undertakes risk analyses and prepares market access proposals) has increased by eight persons (plus 15 contract staff). Overall, livestock disease staffing has increased by about 600, especially to enable HPAI surveillance.

Vietnam

SPS issues are clearly attracting much greater attention in Vietnam, driven in part by WTO accession in 2006, and by a series of donor programs, including the SPS CBP and NZAID Programs. A new Plant Protection Law is currently in draft form and is anticipated to come into force in 2011. A 'Master Plan for Animal Health' is in preparation. Presentations on SPS-related topics by the Vice-Minister for Agriculture and the Director General of the Ministry of Agriculture and Rural Development (MARD) clearly demonstrate renewed commitment at the highest levels to building SPS capacity.

The increase in plant health staff (e.g. from 8 to 11 in the Plant Pest Diagnostics Centre) is reflected by a similar percentage increase across the operational quarantine area. This is despite a Government-wide restriction on increases in numbers of public servants. There has been no net increase in the numbers of professionals in the animal health area. The SPS section in the International Cooperation Department has increased from two to eight staff over this period. Additional resources have been provided for laboratory equipment, for diagnostic (animal and plant pests and diseases), reference literature and computer equipment.

Vietnam now participates in international workshops where ISPMs are discussed and comments upon draft standards. The number of operational quarantine agreements entered into by Vietnam has increased from '4-6' to '7-10'. The number of quarantine agreements under negotiation has increased from '4-6' to '7-10'.

SPS Improvements by SPS CBP Components

SPS Awareness – SPS CBP Component 1

There is abundant evidence among ASEAN countries of increased awareness of SPS issues and of the corresponding need to upgrade SPS-related, technical capacities. However, it is almost impossible to disentangle the influence of SPS CBP activities from that of other donor programs and purely home-grown awareness. A few direct connections can be drawn but even these have been much influenced by other factors. The beginning of strategic shifts in the Myanmar Plant Protection Division and the Malaysian DoA can be linked to participation by senior officials from these countries in the SPS CBP Study Tour to Australia. Plans for in-country, SPS awareness workshops in Indonesia and Lao PDR derive directly from multi-national, SPS CBP workshops. It is encouraging to note that in Cambodia senior agriculture and livestock disease officials are active in promoting SPS issues domestically: veterinary health officials have spoken recently at domestic meetings to implement animal movement control, hygiene management and inspection of livestock products. The Director General, Department of Plant Protection and SPS recently presented on the 'Asian Highway and Trans Asian Railway through Cambodia as a pest pathway' to an FAO Stakeholders meeting. Addresses on SPS issues by the Permanent Secretary, Ministry of Agriculture and Forestry, Lao PDR and the Deputy Director General, DoA to NZAID Phytosanitary Program Meeting in Vientiane (May 2009) certainly demonstrate SPS awareness at high levels in the Lao administration. Numerous presentations by senior Philippines officials to international and domestic fora demonstrate high level and consistent awareness of SPS issues in that country. An address to the Thai Australia Agriculture Working Group by the Director General, DoA, clearly demonstrated keen awareness of SPS issues at senior levels in the Thai DoA.

Across the region, it is also clear that SPS CBP workshops have very successfully alerted many scientific experts and university educators to the fact that their skills and work can contribute their countries 'SPS capacity'. Thai, Indonesian and Malaysian academics especially have made strong contributions to SPA CBP workshops, hosted activities and contributed to publications.

The small booklet produced by the SPS CBP to explain the SPS Agreement in everyday language, has been read widely among Program participants (Figure 7, Appendix H) who have pronounced it to be highly useful (Figure 8, Appendix H). However, distribution of the booklet beyond technical agencies has been problematic. The impact of Program activities (workshops, booklets) to promote SPS awareness in non-agricultural agencies and in the private sector has been modest. Both of these sectors perhaps could be targeted more

effectively through short, in-country workshops and other activities. Translation of the booklet into regional languages has proved challenging, especially because many SPS terms have no direct equivalent in non-English languages.

The Study Tour to Australia for Senior Officials in the first year of the Program was invaluable in garnering support for the Program and in a few cases influencing strategic directions within countries. However, by the final year of the Program approximately 50% of Study Tour participants had retired. There is a case for short, high-quality, strategic, SPS awareness workshops at two or three-year intervals for ASEAN Directors General and their senior advisors.

Plant health information management – SPS CBP Component 2

This Program activity met its objectives completely. Recommendations on the creation of national and regional pest lists, on data standards and on options for data sharing were developed through an SPS CBP workshop and refined through a subsequent AADCP workshop. These recommendations were in turn considered by the ASWGC and referred to ASEAN NPPOs for response. Vietnam has endorsed these standards and recommendations and the data standards were adopted by all NPPOs for the regional AADCP mango survey. The plant health information management activity of the Program was appropriate and timely, given technical standards, protocols and opportunities emerging from global initiatives, such as the Global Biodiversity Information Facility (GBIF).

Bilateral projects, especially PSLP activities and the NZAID PCBP have established local databases and engendered good day-to-day, work practices. However, plant health information management and data sharing among ASEAN countries remains in a very basic state. With regard to the SPS CBP:

- The SPS CBP activity anticipated rather than went hand-in-hand with actual needs. Currently, the volume of digitised data is small, so management and data interchange needs addressed by the SPS CBP are not yet pressing.
- The SPS CBP information management activity highlighted, as-yet-unresolved, data-sharing sensitivities.
- Slow progress towards redevelopment of the NPD (provided by the first phase of the NZAID PCBP) currently constrains progress on data entry and national networking of plant health information in Cambodia, Lao PDR, Myanmar and Vietnam.
- The activity was under-resourced and did not provide for promotion of standards and technical database development throughout the life of the Program.

These matters might have been addressed gradually by on-going project work to validate identifications, consolidate lists and publish diagnostic guides.

Diagnostics – SPS CBP Component 2

Senior officials noted moderate improvement in national capacity to identify plant pests and diseases (Figure 9, Appendix H) and attributed a substantial amount of this to the SPS CBP (Figure 10, Appendix H). However, questionnaire data reveal that nearly half of respondents are no more than moderately confident when performing identifications (Figure 13, Appendix H). Clearly, much remains to be done. Figure 16 (Appendix H) summarises reported, local constraints.

Most SPS CBP workshop participants have performed identifications since completing training (Figure 11, Appendix H), with some very active, and more than half were collecting and preparing the specimens themselves (Figure 12, Appendix H), indicating an encouraging use of practical skills from training workshops.

About three quarters of workshop participants were aware of specimens or samples being sent to another country for identification over the past 3-4 years (Figure 14, Appendix H). However, workshop participants were equally divided as to whether the numbers of specimens and samples sent to other countries had increased, decreased or remained the same over the life of the SPS CBP (Figure 15, Appendix H). Records of specimens submitted to the Imperial Mycological Institute by ASEAN countries suggest a decline in numbers sent to international experts since the 1990s (see Figures 17, 18 in Appendix H for two examples). Very likely this reflects a sharp increase in the cost of obtaining identifications from specialists in well-known, developed-world institutions. Plant health scientists in the ASEAN region have tended to turn to personal contacts (often within their own country) or to potentially less reliable sources of assistance. The SPS CBP has widened this circle of personal contacts by introducing workshop participants to the 20-or-so specialists who led workshop training.

The targets for diagnostic training were selected in consultation with CFPs and regional, laboratory-based, plant health officers. Figures 19-21 (Appendix H) depict the taxonomic diversity of South East Asian plant pests and diseases as revealed by the CABI Crop Compendium and the plant health list server, PestNet. The SPS CBP delivered training in four of the five taxonomic groups that include the most pest species (CABI Compendium) or generate the most enquiries (PestNet). If the arthropod enquiries to PestNet are broken down into constituent taxonomic groups, the ten groups generating the most enquiries are: Lepidoptera (moths, caterpillars); Coleoptera (beetles); Hemiptera (sucking bugs, scale insects, whiteflies, etc.); fungi; viruses; Acarina (mites); bacteria; Thysanoptera (thrips); and gastropods (snails). The SPS CBP targeted five of these (Lepidoptera, Hemiptera, Acarina, fungi and bacteria). Coleoptera were the major omission. Thysanoptera have been covered adequately for the present through other programs. This admittedly coarse analysis reveals that the six diagnostics workshops of the SPS CBP were reasonably targeted, but does not imply that the taxa targeted by the SPS CBP could be neglected by future training. For example, immature Lepidoptera remain an immense challenge for regional scientists. Furthermore, sourcing experts within Australian and internationally is problematic as the number of specialists is diminishing. Training workshops emphasising the identification of pests and diseases of particular crops or commodities are requested very frequently. Of the SPS CBP workshops only the workshop targeting seed-borne diseases of rice met this kind of request. Crop/commodity training is desirable but not always feasible – trainers tend to have taxon-specific skills and it is a costly, time-consuming, cross-disciplinary task to compile comprehensive, crop-specific, training materials.

There is strong support (especially at senior levels) for a regional network that would provide both a means of obtaining confidential identifications and a framework for continuing to upgrade diagnostic capacity among ASEAN members. Survey data revealed that respondents were equally divided upon whether they would make use of a regional, diagnostic network if such existed (Figure 22, Appendix H). The SPS CBP workshop on the ASEAN Regional Diagnostic Network (ARDN) did not take place until May 2009 and thus few questionnaire respondents would have had a clear idea of the nature of the proposed diagnostic network.

Participants in diagnostic workshops were exposed to the concept of an IPPC-endorsed diagnostic standard and the SPS CBP citrus greening workshop revolved around one of these standards. In 2008, DAFF successfully solicited comments on a proposed new, IPPC diagnostic standard (for thrips) from three participants in SPS CBP diagnostic workshops. These comments revealed a clear understanding of the nature and purpose of diagnostic standards. However, overall, very few international, diagnostic standards have been endorsed by the IPPC. Questionnaire responses by workshop participants indicate that the concept of a diagnostic standard remains both poorly understood by the majority of plant health scientists in the ASEAN region and largely irrelevant. Only 15% of respondents were able to suggest a subject for a standard that would assist them in their work.

Reference Collections – SPS CBP Component 2

Most pest and disease reference collections managed by NPPOs in the ASEAN region have grown over the past 3-4 years, but it is difficult to isolate the particular impact of the SPS CBP. Figures 23 and 24 (Appendix H) reveals, encouragingly, that most SPS CBP workshop participants are using skills acquired during this training. The majority of specimens now being formally accessed by curators of the NPPO collections meet international standards (Figure 25, Appendix H). Label data is generally consistent with ISPM 8 and storage units are adequate. Preparation standards are generally much improved, except in the case of some groups of organisms that are notably difficult to process (e.g. small moths, micro-wasps). It is significant that curators now distinguish between ‘display/teaching’ and ‘reference’ specimens, and that growth in collections is largely among the latter. Few collections have adequate climate control. Most SPS CBP workshop participants now understand this, but few have resources to remedy the situation.

It is also encouraging that there is now widespread agreement that national collections are useful for a range of the tasks performed by the NPPO (Figure 26, Appendix H). This consensus reflects a growing understanding of the relevance of reference collections in general and the increasing utility of particular collections. Unfortunately, no similar opinion profile is available for the years prior to the SPS CBP. An exercise conducted in most SPS awareness workshops indicated that less than half of workshop participants had a clear idea of the value of collections prior to the workshop.

In Brunei, the moderate-sized BARC reference collection has grown by about 10%.

In Cambodia, the NPPO’s reference collection, which was virtually non-existent prior to the SPS CBP, has grown modestly.

In Lao PDR, the insect reference collection of the Plant Protection Centre, Salakham was extremely small, with few specimens meeting international preparation, labelling or storage standards. The Centre now has an excellent insect collection, comprising over 1000 well-prepared, well-labelled specimens, accommodated in a high-quality storage system. A plant disease herbarium has been established. The Centre has benefited from SPS CBP training workshops, from in-country training under the NZAID PCBP and from storage boxes, microscopes and other minor equipment provided by NZAID. There has also been some stimulus from an AADCP surveillance project and most recently from an expatriate plant pathologist temporarily resident in Vientiane as part of an Australian volunteer program. Progress at the Plant Protection Centre is an excellent example of the value of a combination of regional and in-country training, accompanied by support for surveillance and for a modest, targeted upgrading of facilities and equipment.

In 2003 the large reference collection of the Malaysian DoA was in rather poor condition in an aging storage system. Since that time, the collection has grown substantially (by about 30%) and new acquisitions are housed in state-of-the-art, storage facilities (Repository and Culture Collection Centre). The SPS CBP and the AADCP have provided some guidance on strategic directions and the Malaysian DoA has supported participation by its staff in SPS CBP training. Funding for surveillance and facilities has also been provided by the Malaysian Government.

The insect reference collection of the Philippines DoA, at the BPI, has grown by about 1000 specimens from about 30 000 in 2003. A parallel, PSLP project has developed a strategic plan for the collection, including the establishment of a small, plant disease herbarium.

The Agri-Food and Veterinary Authority of Singapore (AVA) has long maintained small, high-quality collections and these have increased in size by about 5-10% over the past 3-4 years. As for Brunei and Malaysia, the Singapore supported participation by its officers in SPS CBP training.

The Thai DoA entomological collection is one of the largest in South-East Asia. It has grown by more than 3000 specimens (i.e. by about 3-5%) over the past 3-4 years, as a result of very active collecting. The plant disease herbarium has grown from a very small collection 3-4 years ago, to a well-curated, well-accommodated reference collection of over a thousand specimens, again as a result of very active collecting in line with Departmental priorities and stimulated by a parallel PSLP project.

In Vietnam, the moderate-sized collections of the MARD Plant Protection Diagnostics Centre have grown by about 500 specimens over the past four years. Again, this reflects the influence of regional training from the SPS CBP, in-country training through the NZAID Phytosanitary Program, and the provision of equipment by both NZAID and the Government of Vietnam.

While most collections benefiting from the SPS CBP (i.e. largely the collections of NPPOs) have grown in size, expanded their crop coverage, and improved visibly by other quality measure over the past 3-4 years, the situation in other reference collections in the South-East Asian region remains largely unchanged. There is little networking and several collections identified as vulnerable or under-utilised in 2002-3 remain so. It may be useful for the ASEAN member countries to consider the merits of establishing national/ regional collections networks along the lines of the Entomological Collections Network (ECN) in North America, the Australian Council of Heads of Australian Entomological Collections (CHAEC) or the less formal Australian Plant Disease Database group that links the curators of Australian plant disease herbaria. The agenda of an ASEAN collections network might include policies on access, regional standards, linking agriculture and biodiversity collections, digitising data, locating suppliers of museum essentials, pooling of resources for purchasing etc. In other parts of the world, such Networks typically meet on the side of scientific meetings and require negligible additional resources. They can play a vital role when collections are under threat. ASEAN collections networks could form a complementary role to the proposed ARDN.

SPS CBP Evaluation Survey data indicate that there is still very little sharing or exchange of material among collections and few collections lend specimens to researchers outside their own institution or circle of personal contacts. This is not unreasonable given past experience and current circumstances, including financial constraints. However, this general practice

tends to isolate collections from specialist skills that could be entrained to update identifications, place records in context, and make information more widely available.

Pest risk analysis, technical market access – SPS CBP Component 2

Over the past five years PRA training has been provided by several programs, including activities under the auspices of FAO, by the USDA and by various, bilateral programs, including AusAID's PSLP. Therefore, it is particularly difficult to assess the individual impact of SPS CBP PRA training. Figure 27 (Appendix H) depicts the impact of SPS CBP training as scored by workshop participants and CFPs during the AMC Evaluation Survey. Overall, 76% of SPS CBP PRA workshop participants have used the principles of risk identification, risk analysis or risk management in their work (see Figure 28, Appendix H), and 50% have performed a formal PRA (see Figure 29, Appendix H).

PRA teams in six of 10 countries now include SPS CBP trainees.

Cambodia and Lao PDR have formed small teams (five and three persons respectively) where none existed previously. However, in both of these countries work on PRA and on technical market access (TMA) is still in a very preliminary state. Lao PDR is disadvantaged in current, market access negotiations with at least one powerful, trading partner. Although the Lao NPPO is aware of international SPS 'principles', Lao is not yet a member of the WTO and thus is unable to take what it might regard as unfair treatment to the WTO Dispute Settlement Panel.

Myanmar is the only country without a formal PRA team. However, two examples demonstrate that Myanmar's NPPO staff are conscious of the need for risk analysis: (i) Myanmar is planning the importation of large quantities of oil palm planting material from South America, acknowledges the potential riskiness of this importation, and wishes to entrain international expertise for the associated, challenging risk analysis; and (ii) Myanmar is actively validating its pest and disease lists for pulses, which are a major export commodity. This is being done because the NPPO wishes to anticipate and forestall, potentially damaging, phytosanitary challenges to existing trade.

Indonesia has progressed from having an informal team of five people to a more formal team (about five within IAQA) calling upon approximately 25 experts in external organisations to assist with preparation of PRAs and Technical Market Access (TMAs) requests. In 2007 Indonesia convened a regional workshop on risk analysis of bananas.

In the Philippines and Thailand PRA teams have increased in size (14 to 25, 8 to 20 respectively) and are the most active in the region. The Philippines has four PRAs completed and about 20 underway; Thailand has ten completed, with many more pending. The Philippines and Thailand are also most active in the region in preparing TMAs – the Philippines with about 10 initiated over the past four years and Thailand with over 50. Both the Philippines and Thailand rated the impact of the SPS CBP relatively highly (impact scores of 2 and 1 respectively).

Vietnam's informal PRA team has become more formalised within MARD over the past four years. Approximately 85% of Vietnam's SPS CBP PRA trainees have become involved in PRA work, and the level of activity has increased from virtually no output, to the group being the most active NPPO after the Philippines and Thailand in this regard. Over the past four years about seven PRAs have been completed and between five and 10 are underway. About

ten TMAs have been completed and about eight are underway. MARD rated the impact of the SPS CBP PRA training slightly lower than did the Philippines and Thailand NPPOs (MARD scores of 2-3), suggesting that the MARD PRA and TMA processes are still developing. A handful of small teams has largely driven recent, market access successes. Anecdotal evidence on increasing engagement by industry suggests that future training in phytosanitary risk mitigation and market access might be worthwhile, especially if it were to target both the private and public sectors.

Neither the SPS CBP nor the NZAID Program have been particularly successful thus far in promoting participation by other Government agencies in the market access process. There are as yet largely unrealised roles in this process for Ministries of Foreign Affairs, Trade and Commerce, as well as for representatives of the private sector.

In October 2008, Malaysia convened a workshop to share TMA experiences across APEC economies. This involved sessions on risk analysis and management, and progressed to the sharing of technical and strategic experiences. Workshops of this format could be excellent fora for the enhancement of market access in the future.

Workshop participants have identified various constraints to performing PRA (see Figure 30, Appendix H). This and less structured feedback from SPS CBP workshop participants suggest that training in the specialised areas of impact estimation and risk mitigation would be helpful. Risk mitigation techniques are relatively well developed and advanced training in this area is feasible; impact estimation methodologies are not so mature, and little research has been performed to determine the most practicable approach for analysts in developing countries. Figure 30 (Appendix H) also suggests that donor-supported training in the basic principles of PRA is becoming a lesser priority for most countries.

Trade Study – SPS CBP Component 3

This study, undertaken by the Australian Bureau of Agricultural and Resource Economics (ABARE), documented the strong development of livestock industries in the ASEAN region over recent years, correlated this with strong growth in local meat consumption, and highlighted SPS barriers currently limiting export opportunities. For example, Vietnam and Thailand now are both significant producers of pig meat but disease and hygiene concerns exclude them from the nearby, large Hong Kong and Japanese markets. In fact, Vietnam has lost Russian Federation pig meat markets in recent years because of the presence of FMD. The study also noted that Myanmar is the largest exporter of bovine meat in the ASEAN region, but that it could be even more successful were it not for FMD.

The study drew out an important lesson for producers seeking to overcome SPS barriers. Thailand is now the region's largest meat exporter, mostly because of recent growth in chicken meat trade. Increasingly, Thai exporters have obtained their product from large-scale, more-biosecure, commercial enterprises. The outbreak of HPAI in late 2003 further hastened the trend away from backyard and small-farm operations as the source of export product.

Another important outcome of the ABARE study was modelling that demonstrated the impact of disease and SPS measures on livestock producers and local consumers. The benefit-cost trade-offs of various SPS-related policy decisions (e.g. to perform preventative surveillance or not, to stamp out disease outbreaks or not) were depicted both for scenarios where all production was consumed locally and scenarios where there was a significant export trade. The study thus provided an economic basis for resource allocation. Additionally, ABARE

provided training in the economic modelling so that most countries now have expertise that can be called upon by senior decision makers.

The study will be used in October 2009 as a resource for an STDF Workshop on the use of economic analysis to inform decision making.

Despite its seemingly relevant messages, the actual impact of the trade study appears to have been minimal. The full report of the study was distributed to all ASEAN Government livestock disease agencies along with bulk copies of an attractively produced summary of the key findings. There is little evidence of either publication influencing policy or operational decision making. A more active program to disseminate key findings may have been helpful. However, in recent years ASEAN livestock agencies that might have taken closer interest in this kind of study, either have had access to generous donor funds (especially for HPAI activities) or have been fully occupied with combating disease outbreaks. In such times, with human life at risk and rural hardship self evident, it has not been quite so necessary to call upon rigorous, economic analysis to convince Government that livestock disease surveillance and management are important things to do.

Integrated approaches to disease management – SPS CBP Component 3

This training activity comprised four workshops in advanced epidemiological techniques applicable to livestock disease management and the development of disease zoning strategies. The training activities were endorsed and supported by the MTM Tri-state Commission. The training manuals were revised after the completion of all workshops and augmented by project material prepared by workshop participants. The manuals will be published by the OIE and are currently 'in press'. This ensures that that training materials will be available to a wide audience and contributes to the sustainability of SPS CBP training outcomes.

Appropriate trainees (i.e. animal health professionals with suitable skills and work responsibilities) participated in the training and the same cohort of trainees participated in all workshops (ensuring comprehensive training across a range of inter-related skills). All trainees continue to work in the disease management area. Several have assumed critical, national or regional roles (e.g. one is the national EpiNet coordinator – see below, others are implementing new pig disease projects in Vietnam and Cambodia). The Philippines DoA is using trainees in new disease zoning initiatives. Projects undertaken during the series of training workshops were all based on current and significant animal health issues brought forward by trainees for inclusion in training (e.g. HPAI, brucellosis). Most projects formed part of the week-to-week work of the trainees. Notably, projects required collaboration and information sharing within each country. Project work by Myanmar's participants led directly to the issue of specific animal health orders by the Director General of the LBVD.

The training included strong contributions from regional experts, including the current Coordinator of the OIE SEAFMD Program and the former Director of Animal Quarantine in Indonesia. The quality, relevance and impact of the training was rated very highly by senior livestock disease agency officials in Cambodia, Indonesia, Lao PDR, Myanmar, Philippines, Thailand and Vietnam.

Case studies – SPS CBP Component 3

The SPS CBP Design envisaged that activities comprising this Output would be identified by the trade study (see above). However, the results of the trade study were not available until

late 2007, and projects were selected on the basis recommendations from CFPs and the AMC's Technical Advisory Group. Two targets were selected: FMD in the MTM region and CSF in pigs in the lower Mekong region. The case studies were expanded to include PRRS following an outbreak in Vietnam in 2007.

FMD MTM Region

The first SPS CBP Case Study demonstrated FMD freedom for the southernmost province of Myanmar (meeting the OIE Standard) and provided a basis for livestock trade between Myanmar and Malaysia. This represented a major achievement for the SEA FMD campaign in the MTM region.

A set of four inter-related projects also targeted FMD in the MTM region. These projects established an epidemiological network (EpiNet), a technical advisory group for the MTM Tri-state Commission, provided training in outbreak investigation etc., established local taskforces for delivering the OIE FMD program, and documented livestock trading patterns that influence FMD outbreaks in the MTM region. The MTM EpiNet model and Terms of Reference were endorsed by MTM Tri-state Commission. EpiNet has been established with defined membership, a coordinator has been appointed, Terms of Reference agreed and a work program is in place. EpiNet is confirmed as an integral part of the MTM FMD Program's strategic operations.

The study of livestock trade patterns documented important pathways from central Myanmar, east and south into Thailand, and a number of critical trading nodes. These data confirm the importance of central Myanmar to the ultimate success of the MTM campaign. A proposal for a major program to target FMD in central Myanmar is a milestone for the MTM campaign and a major outcome of the SPS CBP.

CSF/PRRS in Lower Mekong

Two projects targeting pig diseases have been commissioned. Projects dealing with CSF were anticipated by the Program Design and PRRS has recently emerged as a major pig disease. The two projects are complementary and will develop disease-freedom strategies for adjacent provinces in Cambodia and Vietnam. The major outcome of the projects are surveillance and vaccination plans. These SPS CBP has also provided resources for field implementation of the plans during the latter months of 2010. Project outcomes will be reported to the ASWGL in 2010.

Cross-Sectoral impact

Environment

The Program has had no direct, adverse environmental impacts. On the other hand, the enhancements achieved in reference collections, diagnostics and databases will assist countries to meet their obligations under the Convention on Biodiversity (CBD) to report on biodiversity and invasive species. Program activities notably made use of taxonomic specialists whose main work is in the biodiversity sector (especially in Indonesia and Thailand), and thus the Program established some linkages between this sector and the agriculture-quarantine sector.

Gender

Women made up 45% of all workshop participants (Figure 3, Appendix H) and were engaged frequently as trainers in both plant and animal health training activities. Workshop participants benefited from training by several senior, female trainers who presented as strong role models, e.g. Drs Polly Cocks (Australia), Tata Hutabarat (Indonesia), Carolyn Benigno (Philippines) and Jenny Hutchison (Australia) in animal health workshops, and Drs Marianne Horak and Margaret Schneider (Australia), Pyone Pyone Kyi (Myanmar), Pornpimon Athipunyakom and Yupa Hanboonsong (Thailand), Wan Normah (Malaysia), Kartini Kradimbriata and Sri Suharna Siwi (Indonesia), and presenters for the International Rice Research Institute (IRRI) (Philippines) and HLB (Malaysia) diagnostics workshops in plant health.

Workshops also served to identify several young women for postgraduate study, including young female scientists from Thailand, Lao PDR and Myanmar. Three young women are now undertaking postgraduate study in Thailand and Malaysia, and scholarship applications have been approved or are pending for another three women. Two female program participants have received significant promotions during the term of the Program (one to Deputy Director level, one to Director) and another has been offered a senior research position in a different organisation, directly as a result of prominent performances in Program activities.

Gender impact could have been improved if activities had been longer term. This might have provided greater opportunity to apply skills in the workplace where they could have been seen to attract resources and international credit.

Effectiveness of technical training, training models

Most technical assistance was delivered as stand-alone workshops. Mostly different participants took part in the various workshops. Leading specialists with training skills were sourced from Australia, New Zealand and the ASEAN region. Training was based on existing texts and manuals, and compilations commissioned for the workshops. In a limited number of instances, workshops were followed after 12-18 months by in-country, mentoring visits, comprising informal, practical training.

A different, highly successful model was adopted by AusVet Animal Health Services for training in skills for zoning for livestock diseases. This training consisted of a series of four inter-related workshops, each attended by the same participants. Between workshops, participants were required to undertake project work relevant to their own workplace and to the training.

During the livestock trade study, senior economists from ABARE provided advanced training in modelling to a small number of experienced ASEAN economists.

The durability of training could have been enhanced by more explicit efforts to prepare material for incorporation in university curricula.

Formal assessment was undertaken in a sample of two plant health workshops and four animal health workshops. For the majority of workshops, other measures were deemed to be more useful indicators of workshop outcomes (e.g. number and quality of specimens added to plant health reference collections). The two plant health workshops were both specialist, diagnostic training activities and both targeted topics not covered by training under other,

recent, capacity building programs. Both included presentations and substantial, hands-on, laboratory-based sessions.

Diagnostics of seed-borne rice diseases (August-September 2008)

This training took place at the International Rice Research Institute (IRRI), Los Baños, the Philippines and was delivered by IRRI staff. The training was ‘advanced’ in the sense that it targeted difficult, diagnostic tasks and that the techniques used required at least moderately well-developed laboratory infrastructure. Comparison of pre- and post-workshop evaluations reveals that average scores of participants on theoretical aspects improved from 75% to 83% and on practical aspects scores improved from 32% to 58%. Overall, scores improved from 55% to 58%. These data and individual scores, are consistent with observations made by trainers during the majority of other plant health workshops, viz.:

- participants tended to bring reasonable theoretical knowledge to workshops, but this knowledge was not matched by practical skills;
- participants from two or three countries, consistently brought lower levels of practical skills to workshops; and
- English language proficiency correlated with improvements in skills during the workshops.

The first observation possibly points to an imbalance in tertiary-level training received by these participants.

Diagnostics of phytophagous mites (May 2008)

This training was delivered at the University of Malaya, Kuala Lumpur, Malaysia by taxonomic experts from New Zealand and Malaysia. The training targeted a group of pest organisms that are very small in size and traditionally difficult to identify. Participant scores on knowledge tests improved from 30% (which was only slightly better than what might have been achieved by random answering) to 66%. Again, improvement was more marked in practical, morphological components of the syllabus (for which knowledge increased by an astonishing 460%) than in general knowledge of mites or knowledge of mite families (where improvements varied from 197 to 215%).

AusVet Training: WES

The consultancy firm, AusVet Animal Health Services delivered four, linked training workshops within the animal health component of the SPS CBP and routinely made use of its in-house, Workshop Evaluation System (WES). The system is web-based and makes it possible for workshop trainers to create questionnaires and compile responses quickly and easily. Workshop participants gain access to the system via a browser, and thence either to the AusVet website (if internet access is available) or to the system on a laptop in the training room. Participants’ responses are tallied automatically and presented graphically by the system. The system is adaptable to most kinds of questions. Users with modest keyboard skills generally adapt to the interface quickly and with enthusiasm.

Typically, AusVet uses the system at the end of each day of a training workshop and assesses whether any changes should be made to the next day’s activities. Of course, presenters must be sufficiently well prepared to make changes and workshop materials, logistics, etc. must allow it. Because of the flexibility of the system and its capacity to compile and present data rapidly, the system (or something like it) would be a valuable addition to specifications for future training workshops.

AusVet Training: Integrated risk management for livestock diseases (November 2007 – October 2008)

A different kind of evaluation was possible for this training course. The course consisted of four workshops, delivered over a twelve month period at four different venues – Hanoi (Vietnam), Cebu City (Philippines), Bangkok (Thailand) and Luang Prabang (Lao PDR). The same group of trainers and participants took part in each workshop. Three sets of projects formed an integral part of the course. Each set of projects focused on a different topic (the first on disease surveillance, the second on risk analysis and the third on disease zoning and compartmentalisation). Projects were selected and completed by country teams (2-3 participants per team) between workshops and reported upon during the next workshop. Each team selected a different project relevant to their workplace. Project outcomes were subjected to group discussion and assessment by the trainers. Based on summaries and assessments in Milestone Reports, the AMC further rated the projects outcomes.

All projects were practical and relevant to the day-to-day work of the course participants. They included studies of HPAI surveillance and risk, FMD zoning, farm biosecurity for swine diseases and brucellosis eradication. Participants generally demonstrated competence in topics presented in preceding workshops and that they were capable, at least in teams, of applying principles and techniques to real-life situations. The AMC rated 18 of the 21 projects as good – excellent. Country teams tended to perform consistently over the three projects, with teams from Indonesia, Myanmar and the Philippines performing particularly well.

Indonesia's projects were based on the on-going brucellosis eradication program in Kalimantan and delivered outcomes of practical value to this national program. The team's final presentation included the first complete risk analysis as a result of the training course, successfully employed skills from each of the training workshops, and provided information on surveillance to improve the brucellosis program.

Myanmar's projects targeted HPAI in the Ayeyarwaddy Division. The project had immediate impact on disease control policy in Myanmar in the form of a new animal health order from the Director General of the LBVD requiring a series of depopulation and biosecurity actions at local level by divisional, livestock officers. The project demonstrated the value of close interest in the training and project work by the Director General and senior, disease management. The Director General of the LBVD was Myanmar's CFP for animal health for the SPS CBP, participated in the Study tour to Australia in the first year of the Program, and maintained a very close interest in the Program over four years.

One of the Philippines projects focused on a zoning plan for FMD on the island of Luzon. Once again, team members demonstrated their capacity to apply skills from throughout the course to a major, national project. Their final presentation was described as 'inspirational' and 'instructive'.

Training models, venues

Delivery of workshops has been reported upon progressively in Six-monthly and Annual Program reports and will not be revisited in detail. In general, on a scale of 1-5 (1, excellent; 5, poor) workshop arrangements, travel logistics, accommodation, workshop venues, catering, capabilities of trainers and appropriateness of workshop content were all rated 1-2 based on participant exit questionnaires and AMC assessments (reports, first hand observations). For

almost all plant health workshops, which were mostly one-off activities over 2-6 days, participants commented that the duration was too short. Participants and trainers alike, commonly observed that weak English-language skills limited capacity to benefit fully from training.

As noted above, the training in integrated risk management for livestock diseases differed from other training in that the same participants took part in the series of four workshops over a period of about a year. This provided the opportunity for more comprehensive training. Associated project work reinforced learning, applied training to the workplace and enabled meaningful assessment of progress by workshop participants. This training model is high risk in the sense that it invests significant resources in a small number of trainees. However, the evidence of the integrated risk management course is that very careful selection of trainees can produce excellent results. This training model could be applied to specialist, plant health topics in the ASEAN region in the immediate future – a useful pool of capable individuals has already been identified as a result of recent SPS CBP, AADCP, PSLP and NZAID activities and this could be drawn upon for sustained training. This kind of training has an additional advantage in that it does not remove talented and valuable individuals from countries with critically few technical and scientific staff.

The training model is challenging in that it calls for capable, specialist trainers who are both willing and able to commit the substantial time required to develop, deliver and monitor training of this kind. It may be possible to ‘package’ some plant health training topics, either for delivery by one organisation or by a consortium. Inclusion of ASEAN tertiary institutions in the consortium would pave the way for the training material to be incorporated in university-level teaching and thus enhance sustainability.

Training of this kind is likely to be more costly. The integrated risk management course was the most expensive of the training activities under the SPS CBP with costs per workshop approximately twice that of the least expensive (but comparable) plant health workshops (e.g. PRA). The comparison reflects to some extent the price of livestock disease consultants and to a greater extent the cost of coordination and development of integrated, training material.

Locating suitable venues for laboratory-based training was an ongoing challenge. There is an abundance of undergraduate, teaching laboratories but few of these have sufficient numbers of high quality microscopes, light sources and reliable internet access to sustain specialist, plant health training workshops for ten or more participants. With relatively modest investment in equipment several of the universities and government laboratories utilised during the SPS CBP could be upgraded to support quite advanced training. Facilities at the Museum Zoologicum Bogoriense (MZB) and Herbarium Bogoriense near Bogor in Indonesia, at IRRI in Los Baños in the Philippines, and in some Malaysian institutions are notable exceptions. The Indonesian Agricultural Quarantine Agency (IAQA) is currently commissioning a large, new training facility which may become a valuable, regional resource. Venues suitable for laboratory-based training of small groups are more numerous. The problem of laboratory training venues is most severe in those countries with the greatest need to upgrade practical skills, especially Cambodia, Lao PDR, Myanmar and Vietnam.

Procurement

Minor procurement was undertaken to enable practical activities during workshops – collecting equipment, enzyme-linked immunosorbent assay (ELISA) kits, etc.

Funds to procure more costly equipment was made available late in the term of the Program for laboratories in Cambodia, Lao PDR and Vietnam. Equipment was selected through the following process:

- site visits to regional laboratories, discussions and needs assessments;
- consultation with NZAID trainers familiar with these regional laboratories;
- review of hardware and software in use in CSIRO, Canberra; and
- assessment of opportunities for effective deployment of remote microscopy and digital imaging software.

Risk management

The Program's Risk Management Plan is attached (see Appendix I).

Implementation of both animal and plant health activities was delayed by multi-country outbreaks of zoonotic diseases and by political unrest in Myanmar. Schedules were revised repeatedly to accommodate these events and activities of other donor programs.

Cost-benefit Analysis

The Program Design did not include a benefit-cost analysis and such analysis remains impractical. The costs of the workshops held in regional venues were much less than if the workshops had been conducted in Australian venues. However, any comparison should note the superior laboratory facilities available in many Australian venues.

Savings were achieved through the use of regional organisers, venues, bookings, realistic and flexible per diems, and resource personnel. Efficiencies were also achieved through linkages to other programs (e.g. a diagnostics training workshop was conducted in Thailand in conjunction with a related PSLP training activity; a planning workshop was held in Lao PDR in conjunction with a NZAID activity).

Overruns on some training in livestock disease zoning skills reflected the current cost of high-calibre, veterinary epidemiologists. Program management was under budgeted and the Director was effectively a full-time appointment, with the cost of additional time picked up by DAFF at no cost to the Program.

Management costs amounted to 27% of Program costs. Staff costs exceeded budget estimates by 0.7% over the life of the Program.

Activity management

CFPs provided good, in-country coordination, strong support and were generally responsive throughout the term of the Program. Nominees were mostly suitable for training activities, reflecting careful choice by CFPs and their advisors. CFPs had valuable and purposeful input to Annual Plans, especially during in-country roundtables attended by senior staff. One planning workshop involving all CFPs was held in Kuala Lumpur. This was also highly effective.

The DAFF Technical Advisory Group provided high quality input to activity planning. The high level DAFF Steering Committee provided effective, technical and policy insight and input from bilateral interactions with ASEAN countries.

Participants also provided suggestions for activities, especially during informal site visits by the Program Director.

Partner Government

Partner Government input to the Program was via the CFPs and other senior officials participating in annual planning and assisting with the selection of participants. High level officials (e.g. Directors General) commonly presented at opening ceremonies. Partner Governments also demonstrated Program ownership by providing training and research facilities for activities. On many occasions partner Governments provided workshop presenters and facilitators. Malaysia, Singapore and Brunei were not Program beneficiaries but usually provided funding to enable their staff to participate in activities; together these countries hosted no fewer than six SPS CBP workshops.

AusAID

AusAID management was both responsive and proactive. Valuable links were established to ADB and World Bank initiatives as a result of the foresight of the AusAID Activity Manager. Initially there was some lack of clarity regarding monitoring and evaluation. This was addressed very usefully by AusAID Monitoring and Evaluation (M&E) Reviews in Bangkok in May 2007 and by AusAID commissioning independent assistance in late 2008 to develop the Program's Evaluation Plan. AusAID also responded to the gap in procurement by providing additional funds for the purchase of microscopes. Communication with the AusAID regional office in Bangkok was effective and provided good, regional perspective to the Program. In-country AusAID managers were helpful and provided valuable insight to the management team.

Monitoring of activity

Monitoring of Program activities was based on the Logframe and Monitoring and Evaluation matrix. Monitoring and Evaluation data are summarised in Appendix A. The DAFF corporate financial system was mandated as the Program's financial management system. This created significant reporting challenges, e.g. because of the complexity of cost codes. DAFF provided resources to develop a specialist routine tool to enable reporting against individual activities.

Recipient/beneficiaries

Views were obtained via interviews, questionnaires prepared for end-of-program evaluation and via workshop exit questionnaires. Participant benefits and evidence of behavioural changes (e.g. improvements in laboratory facilities and quality of specimens preserved in collections) were also noted during site visits by the AMC. Nominees to activities were mostly appropriate and absenteeism from activities was negligible. Language difficulties were a common challenge to training. Single-country workshops might have circumvented this difficulty to some extent. Because of the technical nature of the training, it is unlikely that formal translation would have been effective or welcomed by trainers.

Sustainability

Country-level changes in SPS capacity, especially those reflecting national policy, regulatory changes and institutional resourcing, indicate an environment favourable to the continued use of skills and practices developed by the SPS CBP. For example, new institutional structures in Cambodia and Malaysia, and the upgrading of the status of the principle SPS agency in Indonesia all augur well for sustainability. New, SPS-related regulations in Cambodia, Lao PDR, Thailand and Vietnam also indicate systemic changes that support sustainability. Anticipated ADB SPS programs in Cambodia, Lao PDR and Vietnam should sustain improvements in those countries, at least in the medium term. However, weak government revenues threaten sustainability in several countries. The costs of performing surveillance remain a constraint for many countries and limit the application of specimen-processing and identification skills obtained during the Program.

Graduates of the SPS CBP have delivered training in subsequent workshops, e.g. in PRA, indicating that on-training is feasible in the absence of external experts. The SPS CBP has fostered regional linkages (e.g. between LIPI and IAQA in Indonesia, between ASEANET and SPS agencies, between Khon Kaen University and the DoA in Thailand) providing opportunities for skill sharing beyond the life of the SPS CBP. Sustainability could be improved by activities to incorporate SPS training into university curricula. There is always a risk that well-trained, technical staff will accept higher paid, higher status, non-technical appointments. There was little that the SPS CBP could do to counter this although the AMC will continue to involve SPS CBP alumni in international activities relevant to their training.

Durable products of the SPS CBP include SPS booklets, economic publications, the set of manuals based on epidemiological training delivered by AusVet, and microscopes and associated digital imaging equipment provided to plant health laboratories in several countries. The procurement of remote microscopy equipment was integrated with a deployment and training program of the Australian-based Cooperative Research Centre for National Plant Biosecurity. This ensures that technical support and mentoring will be available for at least until 2011.

The SPS CBP developed plant health data standards and recommendations for regional information sharing. The AMC has aligned a forest health project in Vietnam with these standards and with the National Phytosanitary Database in use by the NPPO. This will embed SPS CBP outcomes in the Vietnam government system.

The Epidemiological Network (EpiNet) established by the SPS CBP to provide technical advice to the FMD campaign in the MTM region has been integrated into the campaign enjoys ongoing ASEAN government support. Salaries of EpiNet members are met by national agencies.

A regional diagnostic network (ARDN) for plant health scientists has been proposed to assist with the sustainability of diagnostic skills imparted by the Program. This has been endorsed by the ASWGC but will require medium-term, donor funds to establish a framework and induce participation by stronger countries.

7. LESSONS LEARNED AND RECOMMENDATIONS

The SPS CBP was envisaged as a three-and-a-half year activity, but approximately four and a half years have been required for delivery. This largely reflects the need to coordinate activities with related donor programs, delays occasioned by HPAI outbreaks, and the limited absorptive capacity of the smaller ASEAN countries. On the other hand, because of the extended time span, SPS CBP epidemiological training fortuitously was able to make use of HPAI data, and the swine disease case studies were able to include the previously little known PRRS which emerged as a major animal health threat during the life of the SPS CBP. The Program has confirmed that developing SPS capacity is a long term activity.

Recommendation 1: SPS capacity building programs should have an implementation period of at least five years. This may facilitate integration with projects targeting other constraints, such as production, transportation and marketing.

Coordination among multiple donor programs is difficult, time consuming and essential. During the life of the SPS CBP, managers of the SPS CBP, NZAID PCBP, AADCP Plant Health Project and PSLP activities collaborated on project designs, participated in each others planning and shared implementation details such as schedules.

Recommendation 2: Program coordination can be based successfully on robust and shared needs assessments, good will and cross-representation on design, planning and implementation teams.

In many cases a lack of resources prevented SPS CBP participants from fully applying new skills in their workplace. Operational funds for surveillance, equipment, specialist literature and internet access were often reported or observed as limiting factors.

Recommendation 3: Program design should consider modest allocations to support activities such as surveillance and the purchase of essential, specialist equipment and literature.

It is essential to understand and incorporate national and ASEAN priorities in programs. This is time consuming and depends on long-term commitments by planning and implementing organisations. In addition, the performance management systems of ASEAN agencies with SPS responsibilities tend not to correspond closely with the monitoring and evaluation systems of donor programs, which hampers the efficient gathering of information on program impacts.

Recommendation 4: Program design should consider including monitoring and evaluation sessions during the planning and inception phases of programs.

Recommendation 5: Program planning should takes into account national and regional priorities and programs. Ideally, organisations implementing capacity building can commit to long-term engagement with ASEAN agencies and mechanisms.

Understanding of SPS issues remains imperfect in non-agricultural, government agencies and in the private sector. The most successful of the SPS awareness workshops delivered by the SPS CBP and NZAID PCBP perhaps have been those that focused on a particular industry (e.g. the livestock industry) or have been single-country or local in scope. The SPS CBP demonstrated that when senior management of agriculture agencies have a firm grasp of SPS issues, scarce resources can be directed advantageously and technical, SPS advice acted upon.

Recommendation 6: SPS programs should include a component to develop understanding of SPS topics and their relevance to trade. High priority should be given to workshops and seminars that are single-country and engage both the private sector and non-agricultural, government agencies. International seminars or workshops for Directors General and their advisors might also be useful at two- or three-yearly intervals.

Most SPS CBP training was delivered as multi-country, stand-alone workshops attended by different participants. This was an efficient use of the time of specialist trainers. Where only one or two individuals per country require skills or where a train-the-trainer model is appropriate, multi-country workshops should continue to be considered. Single-country workshops are particularly appropriate for imparting skills required by larger numbers of individuals. In a few instances, SPS CBP training workshops were followed by well-received, in-country, mentoring visits. It is logistically impossible to organise these kinds of visits to more than about four countries at a time and these can place heavy demands on the time of experts. One block of training in veterinary epidemiology employed a different, highly effective model. The training consisted of a series of four inter-related workshops, each attended by the same participants. Between workshops, participants were required to undertake project work relevant to their own workplace and to the training. Finally, recent PSLP projects have demonstrated that mentored and collaborative project work is a highly effective method for developing advanced technical skills and for forging long-term, mutually beneficial bonds among specialists and their teams.

Recommendation 7: SPS-related technical training should seek to develop an appropriate mix of multi-country, single-country, stand-alone and integrated workshops, and employ workplace-based project work where possible.

Several SPS CBP activities were hosted by regional universities and delivered in part by regional academics. University staff also participated in some activities as trainees. It was evident that there were opportunities to incorporate SPS CBP training material into university coursework. It was noted that workshop participants often brought no more than modest practical skills to SPS CBP training, suggesting that many regional universities are unable to provide adequate laboratory and field-based training.

Recommendation 8: The sustainability and efficiency of SPS training could be enhanced by efforts to incorporate training material into regional university curricula and by support for the development of university facilities.

The management of plant health information in the region is in a very basic state and there is minimal exchange of primary data. Thus far, simple databases (e.g. those based on MS Excel or MS Access) have proved to be the most durable within agencies. Specialist systems with complex functionality and systems that cannot be upgraded locally have in fact discouraged

the development of information management strategies. Currently, few NPPOs are digitising routinely records from reference collections and surveillance activities. The SAHMBA system for animal health data has been operational for about five years and demonstrates that robust, data sharing systems can be established and sustained in the ASEAN region.

Recommendation 9: Efforts should be renewed to improve plant health information management in the region. This might include small-scale projects that progressively digitise surveillance data, validate identifications, incorporate biological data and images, consolidate data sets within countries, integrate data regionally, and respond to feedback from data users.

Plant pest and disease diagnostic expertise and facilities do exist in the ASEAN region. Several of the larger or better developed countries have specialist diagnosticians and some possess under-utilised, laboratory facilities provided by international donors. Even some of the least-developed countries have expertise in particular technical areas. However, there is no agreement among ASEAN countries, agencies or individuals on what diagnostic service might be provided. There is no agreement on how diagnostic service, if provided, might be paid for. On top of this, most potential users of diagnostic services have little idea how to find the experts that they need. There is a critical shortage of resource people (especially in plant pest and disease diagnostics) within the Asia Pacific region and reliable diagnostic tools simply do not exist for many of the most challenging pest and disease groups. Many of these pests and diseases are also of interest to biosecurity agencies in developing countries.

Recommendation 10: The plant pest and disease diagnostic impediment could be addressed by the establishment of an ASEAN Regional Diagnostic Network. This would link users of diagnostic services more effectively with providers and provide a framework for training users to perform routine identifications themselves, increasing the number of experts in the region and developing reliable, user-friendly diagnostic tools. A strategic plan for such a network is attached as Appendix J.

Recommendation 11: Capacity building in pest and disease diagnostics in the ASEAN region should seek commonalities with biosecurity-related programs in developed countries.

Much still remains to be done to compile national plant pest lists. With the SPS CBP, AADCP Plant Health Project and the NZAID Program all completed or nearing completion, there are no regional programs supporting this high ASEAN priority.

Recommendation 12: Consideration should be given to the design of a program to support ongoing surveillance for pests and diseases of high priority export crops.

Currently, there is little sharing of experience or collaboration among the curators of reference collections, either nationally or across the ASEAN region. Commonly, there are few linkages between agriculture and biodiversity collections.

Recommendation 13: Consideration should be given to national and regional activities to catalyse the development of informal networks of ASEAN reference collections.

The basic principles of pest risk analysis are now relatively well understood. A range of basic training materials is freely available and there are sufficient experts in the ASEAN region to provide introductory training. However, the estimation of the potential impact of introduced pests and diseases and the selection of effective risk mitigation strategies remain challenging. Training material and expertise for these subdisciplines are not so readily available. Currently, ASEAN countries share experiences in market access and risk mitigation in a rather infrequent and *ad hoc* fashion.

Recommendation 14: Consideration should be given to supporting regional or single-country training in pest impact estimation and risk mitigation. Much use could be made of regional expertise and sessions dedicated to the sharing of recent market access experiences would be useful.

The study of livestock trade patterns documented important pathways from central Myanmar, east and south into Thailand, and a number of critical trading nodes. Some pathways still require further investigation, such as the unusual cases of live beasts leaving slaughterhouses (reprieved by Buddhist acts of charity or for breeding purposes!). However, the study supported by the SPS CBP confirms that management of FMD in central Myanmar is one of the keys to the ultimate success of the MTM Tri-State campaign and indeed to the wider, OIE Program to control FMD in South East Asia.

Recommendation 15: Research should continue to define the pattern and drivers of livestock movements in South-East Asia.

Recommendation 16: Consideration should be given to undertaking a pilot project in central Myanmar to investigate the feasibility of a large-scale, FMD management program in this area.

Diverse and substantial training in the investigation and management of livestock diseases has now been delivered in the ASEAN region. However, several future priorities have emerged from evaluation of SPS CBP training activities. Advanced training (in risk analysis, surveillance methods, data analysis, the use of geographical information systems, training methods, crisis and risk communication, cost-benefit analysis of eradication programs and outbreak investigation) would all sharpen the skills of specialist advisors (such as EpiNet members) to livestock disease programs. Front-line, field veterinarians and animal health officers would benefit from additional training in basic, epidemiological principles, knowledge of key diseases, awareness of existing disease management campaigns, the collection and handling of samples, outbreak investigation, information management, risk communication and farm biosecurity. In some provinces, e.g. southern Myanmar, staff turnover is relatively high, necessitating fresh training every few years. AusVet Animal Health Services have recently proposed a new training manual to support the training of front-line, animal health workers.

Recommendation 17: Opportunities should be explored to maintain and upgrade livestock disease skills among specialist and front-line, animal health workers.

Conclusion

There is still much capacity building to be done if ASEAN countries are to meet their SPS obligations and take full advantage of the opportunities created by the SPS Agreement. Continuing donor support will be required. Countries such as Indonesia, the Philippines and Thailand have substantial, domestic, SPS capabilities and are applying determined efforts to enhance these capabilities. However, no ASEAN country is completely self sufficient and regional resources and mechanisms will continue to play a important role. As for the countries with least domestic resources to meet development needs, SPS action plans soon will be finalised for Cambodia, Lao PDR and Vietnam; at least partial implementation should be possible with ADB and World Bank support.

Potentially, there are areas of overlap between the biosecurity programs of developed countries and SPS capacity building programs for developing countries. For example, both a developing country, as a would-be exporter of a commodity and a (possibly quarantine-sensitive) OECD country, as a potential importer, require capacity to detect and identify pests and diseases associated with the commodity. In the future, this kind of common interest can be taken into greater account in the design of both biosecurity and capacity building programs.

8. REFERENCES

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SPS Capacity Building Program

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The 'ASEAN focal countries' comprised Cambodia, Indonesia, Lao PDR, Myanmar, Philippines, Thailand and Vietnam. Since all ASEAN members participated in SPS Capacity Building Program activities, all are included in this table.

LF Ref	Narrative	Verifiable Indicator/s	Evidence / Outcomes (as at 31 July 2009)	Means of Verification
Goal	To enhance the capacity of ASEAN focal countries to meet international SPS standards consistent with the WTO SPS Agreement.	<p>ASEAN focal countries to: (i) formulate SPS measures; (ii) comply with these measures; and (iii) demonstrate improved bilateral or multilateral communication on SPS matters.</p> <p>Notes: (a) An additional indicator ['ASEAN focal countries increase their exports in prioritised agricultural and livestock commodities (as indicated by national trade statistics and related documents, other data on commodity export levels)]' was included in early drafts of the SPS CBP Logframe and M&E Framework. However, it was accepted mid-Program that useful data on this indicator were unlikely to be available during the life of the Program. (b) It was also accepted that the SPS CBP was unlikely to be the <u>sole contributor</u> to some of these high level achievements.</p>	<p>Regional Trade</p> <ul style="list-style-type: none"> Between 2002 and 2007, value of exports of agriculture, food and forest products from Greater Mekong countries increased by an average 110%. Intra-regional trade has grown at a faster rate than the global average. However, the percentage of high-sensitive, SPS products among exports to OECD countries has <u>declined</u>. The numbers of bilateral quarantine agreements involving ASEAN countries, either operational or under negotiation, have tended to remain static or have increased by only one or two per country. The exceptions are the Philippines (operational agreements up by 7), Thailand (agreements up from 4-6 to more than 10) and Vietnam (agreements up from 4-6 to 7-10). <p>Cambodia</p> <ul style="list-style-type: none"> General Directorate of Agriculture upgraded and NPPO reorganised. New Department of Plant Protection and SPS created. First draft of new Quarantine laws under consideration. Plan prepared to set up regional SPS Divisions within Cambodia under direct control of Department of Plant Protection 	<p>ADB draft Action Plan for Greater Mekong Subregion (GMS).</p> <p>AMC Evaluation Survey.</p> <p>AMC Evaluation Survey. ADB draft Action Plan for GMS. Correspondence (31 October 2007) from AQIS to study tour participant, Dr Hean Vanhan (Deputy Director, DAALI). Report of 26th Session of APPPC, 31 August – 4</p>

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LF Ref	Narrative	Verifiable Indicator/s	Evidence / Outcomes (as at 31 July 2009)	Means of Verification
			<p>and SPS. Plan envisages 24 regional plant protection offices for pest management, surveillance and SPS support (5 staff/ office), which would require increase in trained staff from current 10-15 for entire country to about 120. Department currently seeking resources from Cambodian Government to achieve this over a 5-year period.</p> <ul style="list-style-type: none"> • Sub-decree issued enabling plant quarantine inspectors to be deployed back to checkpoints after long period when there has been no plant quarantine inspection. • Discussions initiated between AQIS and General Directorate of Agriculture towards a project proposal to AusAID that would install quarantine infrastructure in Cambodia. • Interdepartmental SPS Committees (both high level and technical) established by Government to coordinate across Departments with SPS responsibilities (Plant Protection, Animal Health and Production, Fisheries Administration). • Numbers of village-level, animal health 'paraprofessionals' are increasing, as is their role in implementing SPS measures. <p>Indonesia</p> <ul style="list-style-type: none"> • Government of Indonesia undertaking review of Quarantine Legislation with 	<p>September 2009, New Delhi, India.</p> <p>AMC Evaluation Survey. Draft MoU received by DAFF.</p>

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LF Ref	Narrative	Verifiable Indicator/s	Evidence / Outcomes (as at 31 July 2009)	Means of Verification
			<p>view to enhancement.</p> <ul style="list-style-type: none"> • Directorate General of Quarantine upgraded. • Direct input by Director General of Indonesian Quarantine Agency to SPS work plan and strong emphasis on SPS issues during bilateral Working Group on Agriculture and Forestry with Australia in 2006. • Indonesia has revised the Australia-Indonesia Agriculture Cooperation MoU to increase emphasis on SPS issues. <p>Lao PDR Lao PDR has adopted national approach to developing SPS capacity by:</p> <ul style="list-style-type: none"> • establishing an SPS coordination office that includes SPS CBP-trained representatives from DoA; • formation of independent, interdepartmental SPS committee, including SPS technical areas; • Government endorsement (2006) of a national SPS Action Plan; • drafting of new Plant Quarantine Law; and • new Veterinary Law now in force. <p>Malaysia</p> <ul style="list-style-type: none"> • Decision at Director General level to enhance resources and strategic planning for SPS technical areas. 	<p>Minutes of Australia-Indonesia Joint Working Group on Agriculture. AMC records (14 May 2007) meeting with IAQA.</p> <p>AMC Evaluation Survey. SPS Action Plan for Lao PDR.</p> <p>AMC Evaluation Survey.</p>

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LF Ref	Narrative	Verifiable Indicator/s	Evidence / Outcomes (as at 31 July 2009)	Means of Verification
			<ul style="list-style-type: none"> Establishment of Malaysian Quarantine Service (MAQIS) along lines of Australian agency, AQIS. <p>Myanmar</p> <ul style="list-style-type: none"> Myanmar has negotiated basis for live cattle trade with Malaysia in MTM region, based on data provided by SPS CBP case study. Heads of Divisions have allocated additional resources to SPS technical capabilities. <p>Philippines</p> <ul style="list-style-type: none"> Philippines has developed a major proposal for upgrading of technical capabilities of quarantine inspection services. Development and commencement of major area freedom project to facilitate mango exports. Have embarked on a national program of domestic 'SPS' capacity building. Initial emphasis was on training, using Philippines expertise e.g. from UP Los Baños. Then focus shifted to specific commodity capabilities for each port (e.g. Port A, grain importation capabilities; Port B, vegetables, etc). In 2007 initiated internal evaluation of quarantine/SPS laboratory network. Next 	<p>AMC Evaluation Survey. Minutes of 8th Meeting of Tri-State Commission on the Establishment of the MTM Peninsular Campaign for Freedom. Report of SPS CBP workshop held in Yangon (2.3.1), March 2006.</p> <p>AMC Evaluation Survey. DAFF records. IPPC website.</p>

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LF Ref	Narrative	Verifiable Indicator/s	Evidence / Outcomes (as at 31 July 2009)	Means of Verification
			<p>financial year will commence a PhP 10 million upgrade of these laboratories.</p> <ul style="list-style-type: none"> • BPI has secured significant extra space by taking over former FAO Building – to accommodate reference collections and research staff. • Because of HPAI significant additional resources have been provided to upgrade livestock disease diagnostic laboratories to international standards (real time PCR etc). Biosecurity levels of laboratories have been upgraded to handle diseases other than AI. AusAID/FAO grant enabled upgrading of laboratory and personnel at regional laboratories (Regions 1 & 2). NZAID assisted upgrading of laboratory in Region 3. Japan/FAO grant assisted with upgrading of Region 7 laboratory. Mindanao – 3 regional laboratories upgraded. Laboratories now conduct livestock disease surveillance regularly, twice per year (previous surveillance was less regular). Have instituted web-based reporting system. Several livestock disease laboratories have achieved or are working towards international accreditation. Overall skill levels of livestock disease laboratories are increasing. • No changes in legislation relating to plant health. However, senior DoA officials are 	

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			<p>keen to harmonise SPS requirements across all regulatory agencies within the Department.</p> <ul style="list-style-type: none"> • A new Plant and Environmental Health Division has been created at the Crop Protection Cluster, UP Los Baños. • Administrative Order No. 16 Pre Border measure on the importation of meat and meat products and Memo Orders regulating the importation of animal, animal products and other products of SPS significance have been issued. • Recruitment to Philippines Government agencies has been severely constrained by financial restrictions. Agriculture Secretary has been supportive of need to replace retiring staff but financial agencies have not been so sympathetic. However, plant health area has achieved an increase of about 30 persons per year, principally through engagement of contract staff. Animal health agencies have increased the amount of work outsourced to private veterinarians. No net staff increase in SPS policy areas. • Philippines participation in IPPC standard setting has increased markedly (Philippines has commented on most or all draft standards during the past 2 years). Philippines is now a member of the IPPC Strategic Planning Group and the IPPC Working Group drafting 	

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			<p>revisions of ISPMs 7 & 12, takes part in annual IPPC meetings, and participates in the WTO STDF.</p> <ul style="list-style-type: none"> The number of operational quarantine agreements has increased by about 7. The number of agreements under negotiation has increased from '4-6' to 'more than 10'. <p>Thailand</p> <ul style="list-style-type: none"> Upgraded Agricultural Quarantine Import Conditions through comprehensive, formal revision of Plant Quarantine Regulations. Surveillance (pests, diseases, weeds) is now a formal DoA project implemented by various groups within the DoA with routine, annual budget allocation. Overall more SPS-related projects, including food safety projects. It is proposed to restructure the DoA so that the Plant Quarantine Research Group moves to the Agricultural Regulatory Division, closer to operational quarantine. This will assist integration of quarantine. The number of operational quarantine agreements has increased from '4-6' to 'more than 10'. The number of agreement under negotiation has remained the same ('1-3'). The laboratories of Plant Pathology Group have been renovated and upgraded. 	<p>Thai Government Notification G/SPS/N/THA/151/Rev.1 (April 2007). AMC Evaluation Survey.</p>

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			<ul style="list-style-type: none"> Plans prepared for new building to accommodate expansion of entomology collection and provide new laboratories for research staff. Funding has been approved for a biosecurity laboratory for HPAI-related work at Kasetsart University. Six 'walk-in' biosecurity containers and diagnostic equipment has also been provided to the livestock disease groups. Plant Quarantine Group has successfully developed a new diagnostics project with ACIAR. Livestock Disease Department has applied to the STDF for funds for compartmentalisation studies and for funds to assist Thailand meet OIE standards. The Plant Pathology is now making fewer applications for international, donor funds. Most DoA groups indicated that they participate in international standard-setting, either by commenting on draft ISPMs or participation in international meetings where standards are discussed. IPPC records confirm Thailand's sustained commitment to the ISPM-setting process. <p>Vietnam</p> <ul style="list-style-type: none"> Deputy Director General MARD 	AMC Evaluation Survey.

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LF Ref	Narrative	Verifiable Indicator/s	Evidence / Outcomes (as at 31 July 2009)	Means of Verification
			<p>recognises importance of SPS awareness to national and provincial institutions (planned use of SPS booklet translations).</p> <ul style="list-style-type: none"> • WTO Accession 2006. • New Plant Protection Law currently in draft form. Anticipated to come into force in 2011. • Presentations on SPS-related topics by Vice-Minister, Director General of MARD. Vice-Minister is said by senior officials to be 'supportive'. • Increase in plant health staff (from 8 to 11 in Plant Pest Diagnostics Centre, is reflected by a similar percentage increase across operational quarantine area). This is despite a Government-wide restriction on increases in numbers of public servants. There has been no net increase in the numbers of professionals in the animal health area. The SPS section in the International Cooperation Department has increased from 2 to 8 staff over this period. • Additional resources provided for laboratory equipment for diagnostic (animal and plant pests and diseases), reference literature and computer equipment – however, only 50% of professional staff have computers, access to technical literature is still limited (e.g. negligible MARD budget for journal subscriptions means great reliance is 	

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			<p>placed on CABI Compendia and free, web-based information sources).</p> <ul style="list-style-type: none"> • Participates in international workshops where ISPMs are discussed and provides comments upon draft standards. • Number of operational quarantine agreements has increased from '4-6' to '7-10'. The number of quarantine agreements under negotiation has increased from '4-6' to '7-10'. • A "Master Plan for Animal Health" in Vietnam is in preparation. • Takes note of OIE business, but not called upon much to participate in much standard setting at present. 	
Purpose	To expand the capability of ASEAN focal countries to describe and manage animal and plant health.	<p>1. By the end of the activity each of the focal ASEAN countries will have an identified improvement (compared to baseline) in their SPS quarantine capacity, in particular in:</p> <ul style="list-style-type: none"> • staff capacity and skills; • validated specimen collections; • information management systems; • pest survey standards; • pest list and records; and • pest risk analysis process. <p>2. By the end of the activity regional networks between the ASEAN focal countries will have increased (compared</p>	See evidence under Components 1-3.	

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		<p>to a baseline) their regional capacity in particular through:</p> <ul style="list-style-type: none"> increased sharing of samples and technical data; increased application to other donors for related funding areas; and increased technical capacity for information sharing across the region. 		
Component 1				
Objective 1	To increase the understanding of, and support for SPS-trade links among governments, research institutions and the private sector.	Government, research institutions and industry leaders display increased understanding of linkages between the SPS Agreement, SPS related measures, and trade by end of activity.	<p>Cambodia</p> <ul style="list-style-type: none"> Revision of sub-decree to deploy MAFF staff at border checkpoints. MAFF supports officers to attend WTO/SPS Committee meetings, Geneva. Senior MAFF officiate and speak at domestic meetings to implement animal movement control, hygiene management and inspection of livestock products. Presentation by Director General, Department of Plant Protection and SPS ('Asian Highway and Trans Asian Railway through Cambodia as a pest pathway') to FAO Stakeholders meeting. Government provides funding to build new plant protection laboratory, Phnom Penh. <p>Indonesia</p>	AMC Evaluation Survey. Records of NZAID PCBP meetings.

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LF Ref	Narrative	Verifiable Indicator/s	Evidence / Outcomes (as at 31 July 2009)	Means of Verification
			<ul style="list-style-type: none"> Indonesian Government upgrades status of IAQA. Additional funding provided for new, quarantine training facilities in Jakarta. Indonesian quarantine law now under revision. Indonesia revises Australia-Indonesia Agriculture Cooperation MoU to increase emphasis on SPS issues. <p>Lao PDR</p> <ul style="list-style-type: none"> Formation of independent, interdepartmental SPS committee, including SPS technical areas. Government endorsement (2006) of a national SPS Action Plan. Drafting of new Plant Quarantine Law. Addresses on SPS issues by Permanent Secretary, Ministry of Agriculture and Forestry, and Deputy Director General, DoA to NZAID Phytosanitary Program Meeting (Vientiane, May 2009). <p>Malaysia</p> <ul style="list-style-type: none"> Following the SPS CBP-sponsored Study Tour, Director General of Malaysian DoA initiated formation of MAQIS – a quarantine agency modelled on that of the Australian system presented on study tour. <ul style="list-style-type: none"> At Malaysian cost, a delegation undertook a more-intensive 	<p>AMC Evaluation Survey. AMC meeting (14 May 2007) with IAQA. Minutes of Australia-Indonesia Joint Working Group on Agriculture.</p> <p>AMC Evaluation Survey. SPS Action Plan for Lao PDR. Records of NZAID Phytosanitary Program.</p> <p>Minutes of the Malaysia-Australia Bilateral Plant Quarantine Technical Discussions (13 March 2007) (DAFF-International Division) 12-22 June 2007. Source – AQIS/ International Division (DAFF) communication.</p>

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LF Ref	Narrative	Verifiable Indicator/s	Evidence / Outcomes (as at 31 July 2009)	Means of Verification
			<p>study tour of Australian and NZ biosecurity systems (8 senior officials from agriculture, planning, aquaculture, human health and veterinary sectors).</p> <ul style="list-style-type: none"> - Subsequently Malaysia formed a national Task Force to implement MAQIS (Task Force led by SPS CBP CFP). - New agency structure implemented. <p>Philippines</p> <ul style="list-style-type: none"> • Presentation on behalf of Dr Permanent Secretary Serrano to ASEAN-EU summit, Vietnam. • Series of stakeholder seminars by senior officials of Bureau AgFish Standards, especially to Philippines exporters. • SPS-related presentations to PSLP Project meeting in the Philippines (September 2006). • Presentation by senior official on 'Building of national pest list to underpin Agricultural Exports in the Philippines' to 29th National Academy of Science and Technology Meeting, Manila, 4-12 July 2007. • Presentation: 'The Importance of Biological Collections in the Philippines', 7th ISAAS Phil. National Convention and Annual Meeting, 2007. 	<p>Personal communication from Malaysian CFP to AMC (February 2008)</p> <p>AMC Evaluation Survey.</p>

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			<ul style="list-style-type: none"> Presentation ‘The Importance of Biological Collections’, National Resource Council of the Philippines, 9 March 2009. Series of presentations on livestock disease topics and transboundary issues by senior livestock agency officials: Dr Reildrin G Morales - FMD. Dr Samuel B Animas - Avian Influenza. Dr Leonilo L Resontoc - Rabies. Dr Davino P Catbagan - OIE. Drs Simeon S Amurao and Castor Leo Ejercito and Davinio P Catbagan. Technical skills relevant to SPS are taught across many Philippines universities. However, undergraduates generally receive no exposure to SPS issues <i>per se</i>. Exception is treatment of public health in some university veterinary coursework. <p>Thailand</p> <ul style="list-style-type: none"> Address to Thai Australia Agriculture Working Group by Director General, DoA, demonstrates keen awareness of SPS issues. Minister of Agriculture reported to be aware of SPS issues. Additional resources made available to address emerging SPS-trade issues (e.g. mango seed weevil in 2008). Senior plant pathology scientists now make regular, cross-disciplinary presentations to undergraduates in 	<p>AMC Evaluation Survey. DAFF records of Bilateral Working Group Meetings and requests for technical assistance.</p>

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			<p>medicine and domestic economics at Kasetsart and Ramkhamhaeng Universities.</p> <ul style="list-style-type: none"> • Agriculture and science undergraduates receive basic training in plant pathology and entomology relevant to SPS. PRA is included in the final year plant pathology course. Veterinary graduates obtain a good grasp of epidemiology and disease control, especially at Masters level. • Senior DoA officers have made presentations on new quarantine regulations to industry stakeholders, especially importers, exporters and grower groups. • Staffing levels have remained constant in plant pathology and entomology groups relevant to SPS. However, recruitment of younger graduates to replace retiring senior staff has been noted. Remarkably, the Plant Quarantine Research Group (which undertakes risk analyses and prepares market access proposals) has increased by 8 (plus 15 contract staff). The livestock disease staffing has increased by about 600, especially to enable HPAI surveillance. 	

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Output 1.1	Program of information provision and awareness raising conducted.	<p>Program for appropriate senior managers, researchers and exporters, which exposes participants to Australian management of plant and animal health, overviews SPS issues and explains the links between these issues and trade.</p> <p>Booklet explaining SPS Agreement in plain language is effective in increasing understanding.</p>	<p>Awareness training</p> <ul style="list-style-type: none"> Representatives of both government and private sector participated in plant health SPS awareness workshops. Indonesia requests assistance in delivering additional, in-country SPS awareness based on SPS CBP training. Request for regular regional training for Directors General of animal health agencies. <p>SPS booklets</p> <ul style="list-style-type: none"> Translated versions of SPS booklet distributed by CFPs. Lao PDR Agriculture seeks internal funding to hold a one-day meeting with Lao SPS stakeholders (health, animal health, trade, agriculture, other donors, SPS Coordination Office) to receive feedback and endorsement on Lao version SPS booklet. Philippines: Senior plant and animal health officials have read the SPS booklet, rate it '1, Very useful' and have requested additional copies. Thailand: SPS booklet (English language version) has been read by only ¼ of senior officials. The Thai language version is in press. Vietnam: E-version of Vietnamese booklet translation further modified for domestic use. Booklet read by 4/4 senior 	<p>Workshop reports.</p> <p>Records of Australia-Indonesia Bilateral Quarantine meeting. 2008-9 PSLP project reports. Report of SPS awareness workshop for animal health stakeholders.</p> <p>Distribution plan provided to AMC by Vietnamese CFP. 2007-8 Annual Tour. 29 March 2007 meeting with Lao DoA/ Personal communication with AMC June 2007.</p> <p>AMC Evaluation Survey.</p> <p>AMC Evaluation Survey.</p> <p>Advice to AMC from Vietnam CFP. AMC Evaluation Survey.</p>

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			plant health officials. Rated as very useful. Requested that additional English language and Vietnamese language versions be provided (in equal numbers – difficult to render precise meaning in Vietnamese translation). Booklet not read by animal health focal point.	
Component 2				
Objective 2	To build capacity for constructing national pest lists and undertaking pest risk analyses.	Increase in number and quality of pest lists and risk analyses undertaken (or movement towards the capacity to undertake these) which are accepted by trading partners and which meet international standards by end of activity.	<ul style="list-style-type: none"> AMC sought for technical and strategic advice to other donors or further establishment, networking and integration of database systems. 	AADCP, NZAID, PSLPs, Vietnam CARD
			<ul style="list-style-type: none"> Lao DoA ran one training course on PRA, using 2 trainers from 2.4. 	Correspondence to AMC 8 March 2007; Workshop held late March 2007.
			<ul style="list-style-type: none"> Review of Thailand Import Conditions results in increased regulations (hence increased quality of PRA). Major trading partners (US, Australia, NZ) have to meet more strict requirements for exporting agricultural commodities to Thailand. 	Discussion with BA 17 April 2007.
			<ul style="list-style-type: none"> Lao DoA has translated some workshop materials into Lao, at own cost, and disseminated/ trained locally engaged technicians. 	2007-8 Annual Tour. 29 March 2007 meeting with Lao DoA.
			<ul style="list-style-type: none"> 8 participants (3 Cambodians, 3 Vietnamese, and 2 Lao) identified from this series of workshops as competent for study tour/ delivery of consultancy service to NZAID to enable progress of building plant health infrastructure in 	14 June 2007 meeting with Technical Director, NZAID Phytosanitary Building in the Lower Mekong.

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			given countries.	
			<ul style="list-style-type: none"> Compilation of ASEAN regional pest list for mango. 	Report of AADCP Plant Health Project.
Output 2.1	Data standards and information management requirements for building national and regional pest lists in ASEAN countries endorsed.	Protocols developed and endorsed for: <ul style="list-style-type: none"> Development of national pest lists; Development of regional pest lists; and Sharing of data across the region. 	Standards and protocols <ul style="list-style-type: none"> 2.2.1 Workshop recommendations endorsed and enhanced by AADCP Pest List Data Consolidation Workshop. Recommendations on development of national and regional pest lists, data standards and options for data sharing considered by ASWGC and referred to ASEAN NPPOs for response. Vietnam has endorsed these standards and recommendations. Data standards adopted by NPPOs for AADCP mango survey. Cambodia, Lao PDR, Myanmar and Vietnam seek upgrade of National Phytosanitary Database to enable more efficient data sharing. Thai and Philippines DoA adopt pest and disease data management systems consistent with data standards recommended by SPS CBP. 	AADCP Workshop, Putra Jaya, Malaysia, 7-9 February 2007. Records of ASWGC May 2006 Vientiane, Lao PDR and July 2007, Langkawai, Malaysia. AMC Evaluation Survey. Reports of AADCP Program Records of NZAID Phytosanitary Program CFP meeting. Advice from NZAID Program Manager to AMC. Records of workshops conducted under PSLP projects.
			Impact of SPSCBP on database development <ul style="list-style-type: none"> Impact of SPS CBP on database 	AMC Evaluation Survey.

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			<p>development has been only moderate (scores 2-4 according to CFPs and workshop participants).</p> <ul style="list-style-type: none"> Impact of bilateral projects, especially PSLP and NZAID has been more substantial. 	
			<p>Data entry</p> <ul style="list-style-type: none"> Thailand: Estimate 500 entries into Excel database of plant disease records. Vietnam: Estimate 500 records entered into Plant Protection Department pest and disease database. 	AMC Evaluation Survey. Records of NZAID PCBP.
			<p>Data exchange/pest list sharing</p> <ul style="list-style-type: none"> Vietnam has shared pest lists for more than 10 commodities with other ASEAN countries in recent years, including citrus, mango, banana, cabbage, paddy rice, coconut and peanuts. Thailand: DoA Entomology Group maintains arthropod records in Biolink database. Plant Pathology Group maintains records in Excel database. No systems are yet in place for exchanging data between systems, making data available to the Quarantine Research Group or for aggregating data. Anticipated redevelopment of National Phytosanitary Database currently constrains progress on data entry and national networking in Cambodia, Lao PDR, Myanmar and Vietnam. 	AMC Evaluation Survey. Records of NZAID PCBP.

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Output 2.2	Regional diagnostic capacity and understanding of diagnostic standards improved	Up to 100 plant health professionals will have an understanding of the concept of diagnostic standards and diagnostic training adequate to the requirements of their position.	<p>Numbers receiving training</p> <ul style="list-style-type: none"> Diagnostic training workshops were delivered as follows: Plant-sucking bugs (14 participants); citrus greening disease – HLB (14); plant pathogenic fungi (15); pest Lepidoptera (15); phytophagous mites (13); seed-borne diseases of rice (10). Total: 81 participants. Approximately 10 workshop participants identified as potential regional, taxonomic specialists. <p>Impact of training</p> <ul style="list-style-type: none"> See Figures 10, 25, 27, Appendix H. <p>Concept of diagnostic standard</p> <ul style="list-style-type: none"> All workshop participants were exposed to the concept of an IPPC diagnostic. Little evidence that the concept is particularly relevant to the day-to-day work of participants. Participants from diagnostic workshops provided comments to DAFF on international diagnostic standard proposed by IPPC. <p>Regional diagnostic network</p> <ul style="list-style-type: none"> Concept of ASEAN regional diagnostic network endorsed by ASWGC and supported by all CFPs. 	<p>AMC records.</p> <p>AMC Evaluation Survey.</p> <p>AMC Evaluation Survey.</p> <p>AMC Evaluation Survey.</p> <p>Comments to OCPPO, DAFF on proposed thrips diagnostic protocol.</p> <p>Records of ASWGC, July 2007, Langkawai, Malaysia. AMC Evaluation Survey.</p>

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LF Ref	Narrative	Verifiable Indicator/s	Evidence / Outcomes (as at 31 July 2009)	Means of Verification
Output 2.3	Awareness for the need for biological collections enhanced, and capacity in preservation, curation and data management improved.	<p>A total of 144 regional plant health professional, agricultural scientists and mid-level managers will have increased knowledge as appropriate to their positions, of:</p> <ul style="list-style-type: none"> the World Trade Organization; the Agreement on Sanitary and Phytosanitary Measures and the international standards (ISPMs) that flow from this Agreement; Pest Risk Analysis; diagnostic standards; the need for biological collections; and their role in assisting to build and populate pest collections, covering such matters as data standards and preparing specimens for consignment to the curators. <p>Participants will improve their technical capabilities to collect and prepare reference specimens of pests and diseases, and manage reference collections.</p>	<p>Awareness</p> <ul style="list-style-type: none"> SPS Awareness & Collection rehabilitation (96 participants); SPS Awareness for Plant and Animal Health (48). Total: 144 participants. Recognising the key role of plant pest collections, Myanmar allocates additional infrastructure (rooms, equipment, air-conditioning) to plant pest and disease collections. Reference collections generally regarded as useful for market access, quarantine, crop protection and diagnostic purposes (Figure 26, Appendix H). Senior management of Lao DoA provides funding for repair and renovation of Plant Protection Centre housing reference collections. Major upgrade of facilities housing diagnostic laboratories and reference collection of Indonesian Agency for Agricultural Quarantine. Thai DoA provides 50% increase in space for insect collection and develops plans for additional building to provide additional accommodation for taxonomic researchers and collections. Thai DoA also renovates accommodation for plant disease herbarium. Additional space provided to Philippines BPI insect reference collection. 	<p>AMC records.</p> <p>Highlighted in SPS workshop held in Yangon (2.3.1), March 2006.</p> <p>AMC Evaluation Survey.</p> <p>AMC Evaluation Survey.</p> <p>AMC Visit, March-May 2007.</p> <p>AMC Evaluation Survey.</p> <p>AMC Evaluation Survey.</p>

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			Collection development, improvement of technical skills <ul style="list-style-type: none"> • Brunei: BARC reference collection increased y approximately 10%. • Cambodia: Reference collections initiated using international standards for preparation and storage. • Lao PDR: Lao DoA Plant Protection Centre Reference collections increased by more than 1000 specimens, including initiation of plant disease herbarium. • Malaysia: DoA reference collection increased by about 30%. • Myanmar: Plant Protection Division reference collections increased by several thousands of specimens, including establishment of plant disease herbarium. • Philippines: BPI reference collection increased by about 1000 specimens. Strategic plan for reference collections, including new plant disease herbarium developed. • Singapore: 5-10% increase. • Thailand: Reference collection of Thai DoA increased by about more than 3000 specimens. • Vietnam: Mycology collection increased by 20-100 specimens, arthropod collection by more than 150. Many fruit fly specimens unidentified and not counted. 	AMC Evaluation Survey.

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			<ul style="list-style-type: none"> The majority of workshop participants had used skills acquired since SPS CBP training workshops in their day-to-day work and many had provided on-training to work colleagues (see Figures 6, 23, 24, Appendix H). Majority of specimens formally accessed by NPPOs reference collections now consistent with ISPM 8 data standards. Preparation standards generally meet international, best practice, save for 'difficult' groups, such as Lepidoptera. (see Figure 25, Appendix H). Most countries with active pest and disease surveillance activities: Cambodia (no data); Brunei (approx. 11 different crops); Indonesia (no data, but surveillance of various tropical fruits undertaken); Lao PDR (7); Malaysia (17); Myanmar (13); Philippines (14); Singapore (7); Thailand (19); Vietnam (17). 	
Output 2.4	Capacity to deliver training in PRA expanded in the Region.	Ten graduates of PRA TTT have the skills and knowledge to contribute effectively to standard PRA training workshops.	<ul style="list-style-type: none"> One Train-the-Trainer PRA workshop (Hanoi, Vietnam; 10 participants) and 3 standard PRA training courses (Phnom Penh, Singapore, Brunei (total of 69 participants). Total: 79 participants). Training materials consistent with IPPC Standard and BA training materials. 6 of 10 Train-the-Trainer graduates (4 female, 2 male) assisted in delivery of subsequent SPS CB PRA courses. 	AMC records. AMC Evaluation Survey. NZAID Phytosanitary Program records.

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			<ul style="list-style-type: none"> • 2 Train-the-Trainer graduates (1 female, 1 male) have delivered national PRA training courses. • PRA teams in 6 of 10 countries include SPS CBP trainees. • Cambodia and Lao PDR have formed small teams (5 and 3 persons respectively) where none existed previously. • Indonesia has progressed from having an informal team of 5 people to a more formal team (about 5 within IAQA) calling upon approx. 25 experts in external organisations to assist with preparation of PRAs and TMAs. Indonesia convened a regional workshop on risk analysis of bananas. • Philippines, Thailand: PRA teams have increased in size (14 to 25, 8 to 20 respectively). • Philippines has 4 PRAs completed and about 20 underway; Thailand has 10 completed, with many more pending). • Philippines and Thailand most active in preparing TMAs (Philippines with about 10 initiated over past 4 years, Thailand with over 50). Both the Philippines and Thailand rated the impact of the SPS CBP PRA training relatively highly (impact scores of 2 and 1 respectively). • Vietnam: Previously informal PRA team formalised within MARD over the past 	

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			<p>four years; approx. 85% of Vietnamese SPS CBP PRA trainees have become involved in PRA work; activity has increased from virtually no output, to being the most active NPPO after the Philippines and Thailand (over four years about 7 PRAs completed, 5-10 underway; about 10 TMAs completed, about 8 underway); MARD rated impact of SPS CBP PRA training slightly lower than did Philippines and Thailand NPPOs (MARD scores of 2-3).</p> <ul style="list-style-type: none"> • Malaysia: Convened workshop (Melaka, October 2008) to share TMA experiences across APEC economies; sessions on risk analysis and management, demonstrating technical capacity. • 76% of SPS CBP PRA workshop participants have used the principles of risk identification, risk analysis or risk management in their work (see Figure 28, Appendix H). • 50% of PRA workshop participants have performed formal PRA (see Figure 29, Appendix H). • Impact of SPS CBP PRA training assessed as in Figure 29, Appendix H. 	

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Component 3. Animal Health				
Objective 3	To strengthen the national and regional capacity of government and livestock exporters to control trans-boundary animal diseases.	<p>By the end of the activity each country will have improved systems for analysis, risk mitigation and information sharing.</p> <p>By end of the activity there will be increased systems and processes in place for cross regional information sharing and decision making.</p>	<p>Gathering of livestock disease data, analysis, risk mitigation and sharing of information has improved markedly nationally and across the region in the past five years. This has been driven by various initiatives, including large, international donor programs targeting HPAI. Individual program impacts on livestock disease capabilities are difficult to ascribe. However, the SPS CBP has been instrumental in:</p> <ul style="list-style-type: none"> • establishing EpiNet as a technical, advisory group supporting the MTM commission; • instigating swine disease projects for collaborative development by Cambodia and Vietnam; • furthering local implementation of the MTM FMD campaign through task forces and stakeholder meetings; • exchange of critical information on livestock movements affecting the FMD campaign in SE Asia; and • the training of small groups of epidemiological experts in each country to provide high-calibre, technical advice to livestock disease agencies. 	See Outputs 3.1, 3.2 and 3.3.
Output 3.1	Assessment of SPS-related, economic barriers for livestock trading in the Region.	A study was undertaken, covering all ASEAN focal countries, to analyse current and future trade patterns in livestock and livestock products in the	<ul style="list-style-type: none"> • All countries (other than Cambodia) completed training in animal disease, decision modelling, and have developed 	Results presented in ABARE Workshop, Canberra, 29-30 May 2007. Formal publication of trade

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		region, constraints to future trade expansion, including SPS barriers to trade expansion, as well as options for addressing the barriers identified.	<p>computer model for use in their own institution.</p> <ul style="list-style-type: none"> • Major barriers to trade were identified. • Technical validity of trade study by ABARE confirmed by Australian peer review. • The study revealed benefit-cost tradeoffs for surveillance and various responses to outbreaks of serious animal diseases; tradeoffs differed depending on the export focus of livestock industries. During non-outbreak years, non-SPS inputs (e.g. feed costs) represent the major costs to producers. • The study was limited by availability of reliable, industry-specific data for many countries. • Study forwarded to WTO Committee on SPS Measures for incorporation in STDF Workshop on the use of economic analysis to inform SPS decision-making, Geneva, 30 October 2009. • The study has so far had little, discernible impact on policy or resourcing for livestock industries. During 2004-9, the consequences for human-health of the outbreak of HPAI provided a major funding stimulus and somewhat overwhelmed consideration of the economic cost of SPS measures against livestock diseases. • Livestock trade study not read by senior 	<p>study technical report on ABARE website (2007). Publication of plain-language, summary of study findings (2007). Impact of study on policy and programs within ASEAN public sector agencies assessed during AMC Evaluation Visits (2009).</p>

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			livestock officials in Philippines.	
Output 3.2	Capacity to plan and implement various integrated approaches to disease risk management enhanced.	Regional practitioners and veterinary scientists, or regional managers with responsibilities in animal disease control for serious infectious diseases demonstrate increased knowledge of integrated approaches to disease risk management.	<ul style="list-style-type: none"> • Training activities endorsed and supported by MTM Tri-State Commission. • The training manual was revised after the completion of all workshops and augmented by project material prepared by workshop participants. The manual will be published by the OIE and is currently 'in press'. This ensures that that training materials will be available to a wide audience and contributes to the sustainability of SPS CBP training outcomes. • Appropriate trainees (i.e. animal health professionals with suitable skills and work responsibilities) participated in the training and the same cohort of trainees participated in all workshops (ensuring comprehensive training across a range of interrelated skills). • All trainees continue to work in the disease management area. Several have assumed critical national or regional roles (e.g. one is the national EpiNet coordinator – see below, others are implementing new swine disease projects in Vietnam and Cambodia). Philippines are using trainees in new zoning initiatives. • Projects undertaken during the series of 	Minutes of 8 th and 9 th Meetings of Tri-State Commission on the Establishment of the MTM Peninsular Campaign for Freedom (2008, 2009). Funding proposal to ACIAR for consideration 1 June 2007. Funding recommendation from OIE to support formal publication of manual. Milestone Reports from AusVet to AMC (February 2008).

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			<p>training workshops were all based on current and significant animal health issues brought forward by trainees for inclusion in training. Most projects formed part of the week-to-week work of the trainees. Notably, projects required collaboration and information sharing within each country.</p> <ul style="list-style-type: none"> • The training included strong contributions from regional experts, including the current coordinator of the OIE SEAFMD Program and the former Director of Animal Quarantine in Indonesia. • Rating of impact of training by senior livestock officials: Philippines ('3'). • Rating of relevance to day-to-day work: Philippines ('2'). • Philippines senior officials readily able to identify candidates for zoning in their country (FMD, AI). 	
Output 3.3	Demonstrations undertaken of establishment and expansion of disease-free zones.	Two areas of research or surveillance which advance opportunities identified for livestock trading (see Output 3.1) undertaken by end of activity.	<p>FMD MTM Region</p> <ul style="list-style-type: none"> • First project demonstrated FMD freedom for southernmost province of Myanmar (meeting the OIE standard) providing basis for livestock trade between Myanmar and Malaysia (major achievement for the SEA FMD campaign in the MTM region). • Four FMD projects in MTM region: established EpiNet, a technical advisory group for the MTM Tri-State 	<p>Minutes of 8th and 9th Meetings of Tri-State Commission on the Establishment of the MTM Peninsular Campaign for Freedom.</p> <p>Reports to AMC (include dates), OIE SEAFMD RCU.</p> <p>Report: MTM EpiNet Established: Website of</p>

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			<p>Commission, provided training in outbreak investigation etc., established local taskforces for delivering the OIE FMD program, documented livestock trading patterns that influence FMD outbreaks in the MTM region. MTM EpiNet model and TOR endorsed by MTM Tri-State Commission.</p> <ul style="list-style-type: none"> EpiNET established with defined membership, coordinator, ToR, work program; confirmed as integral to MTM FMD Program's strategic operation. Study of livestock trade patterns documented important pathways from central Myanmar, east and south into Thailand, and critical nodes; confirmed importance of central Myanmar to ultimate success of MTM campaign. Proposal for major program targeting FMD in central Myanmar is milestone for MTM campaign and major outcome of SPS CBP. <p>CSF/PRRS in Lower Mekong</p> <ul style="list-style-type: none"> Two projects targeting swine diseases have been commissioned. A project dealing with CSF was anticipated by the PDD. PRRS has recently emerged as a major swine disease. The two projects are complementary and will develop disease-freedom strategies for adjacent provinces in Cambodia and Vietnam. The major 	<p>SEAFMD OIE Regional Coordination Unit Bangkok http://seafmd-rcu.oie.int. Independent verification by DAFF OCVO representative. Report on study of livestock movements to AMC. FMD awareness material (posters, leaflets) in Myanmar language. AMC records.</p>

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			outcome of the projects are surveillance and vaccination plans. These SPS CBP has also provided resources for field implementation of the plans during the latter months of 2010. Project outcomes will be reported to the ASEAN Sectoral Working Group on Livestock in 2010.	
Component 4				
Objective 4	To manage the program effectively and efficiently.	Milestone and other reports provided on schedule and accepted by AusAID.	<ul style="list-style-type: none"> Submitted and approved. 	See Appendix E.
Output 4.1	Offices and administrative systems established, and staff appointed and trained.	Program staff appointed and administrative systems established to standard required by the program by end of Year One.	<ul style="list-style-type: none"> Established, maintained, including database of participants and scheduling tool. 	AMC records.
Output 4.2	Regional and in-country coordination mechanisms established and networking between organisations enhanced.	Functioning networks established between all country focal points by end of Year One.	<ul style="list-style-type: none"> Effectiveness of CFP Network demonstrated at CFP workshop (August 2006) – responses, commitment, awareness of program and outputs and pro-activity by CFPs enhanced since this point. CFPs have become increasingly responsive to AMC requests and supportive of the SPS CBP. 	AMC records.
Output 4.3	M&E Framework prepared and implemented.	M&E reports available which provide adequate performance information about the program from Year Two to end of Activity.	<ul style="list-style-type: none"> M&E framework assessed by independent review panel. Recommendations made for improvement, AMC implementing recommendations. 	Evidenced in 2007-8 Annual (Operational) Plan under Component 4, Monitoring and Evaluation and also 2006-7 Annual Report.

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Output 4.4	Annual Plans prepared and submitted.	AusAID receive Annual plans according to AusGUIDE standard annually for the life of the Activity.	<ul style="list-style-type: none"> CFPs, DAFF Steering Committee, AusAID input incorporated into Annual Plans. 	AMC records.
Output 4.5	Progress reports and Program Completion Report submitted.	Reports as required under the Activity Design Document are completed on time and to a standard which is adequate to inform AusAID about the progress of the program.	<ul style="list-style-type: none"> Submitted and approved. 	See Appendix E.

APPENDIX B – KEY DATES IN CHRONOLOGICAL ORDER

Date/s	Name of Workshop/Activity	Venue and Country
22-23 Aug 2005	Pest Lists: Data Standards and Information Management Workshop	The Legend Hotel, Kuala Lumpur, Malaysia
24-25 Sep 2005	SPS Awareness Workshop [Plant Health in the Global Trading Environment: An Introduction to the Role of Specimen-based Pest Lists]	Museum Zoologicum Bogoriense, Cibinong, Bogor, Indonesia
26-30 Sep 2005	Training Course on Arthropod Preservation, Curation and Data Management	Museum Zoologicum Bogoriense, Cibinong, Bogor, Indonesia
8-15 Oct 2005	SPS Study Tour to Australia	Australia (Melbourne, Geelong, Canberra, Brisbane)
14-18 Nov 2005	Pest Risk Analysis Train-the-Trainer Workshop	International Cooperation Department, Ministry of Agriculture and Rural Development, Hanoi, Vietnam
21-25 Nov 2005	Training Course on Diagnostics of Plant-sucking Bugs (Order-Hemiptera)	Universiti Malaya, Kuala Lumpur, Malaysia
13-17 Mar 2006	Standard Plant Pest Risk Analysis (PRA) Workshop	Goldiana Hotel, Phnom Pehn, Cambodia
20-24 Mar 2006	Workshop on the Diagnostics of Citrus Greening Disease (HLB)	Agricultural Research Centre, Department of Agriculture, Kuching, Sarawak, Malaysia
24-25 Mar 2006	SPS Awareness Workshop [Plant Health in the Global Trading Environment: An Introduction to the Role of Specimen-based Pest Lists]	Sedona Hotel, Yangon, Myanmar
26-31 Mar 2006	Training Course on Plant Disease Specimen Preservation, Curation and Data Management	Plant Protection Division, Myanmar Agriculture Service, Ministry of Agriculture and Irrigation, Yangon, Myanmar
23-25 June 2006	SPS Awareness in Plant Health: A workshop for middle managers and the private sector of the ASEAN region	Lane Xang Hotel, Vientiane, Lao PDR
7-8 Aug 2006	ASEAN Country Focal Points Meeting on 2006-7 SPS CBP Operational Plan	Boulevard Hotel, Kuala Lumpur, Malaysia
15-17 Sep 2006	SPS Awareness Workshop [Plant Health in the Global Trading Environment: An Introduction to the Role of Specimen-based Pest Lists]	Universiti of Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia

Date/s	Name of Workshop/Activity	Venue and Country
18-22 Sep 2006	Training Course on Arthropod Specimen Preservation, Curation and Data Management	Universiti of Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia
25-26 Oct 2006	SPS Barriers to ASEAN Meat Exports	Ministry of Agriculture and Rural Development (MARD), Hanoi, Vietnam
19-21 Jan 2007	SPS Awareness Workshop [Plant Health in the Global Trading Environment: An Introduction to the Role of Specimen-based Pest Lists]	Maruay Garden Hotel, Chatuchak, Bangkok, Thailand
22-26 Jan 2007	Plant Disease Specimen Preservation, Curation and Data Management Workshop	Department of Agriculture, Chatuchak, Bangkok, Thailand
29 Jan – 2 Feb 2007	Workshop on Diagnostics of Plant Pathogenic Fungi	Department of Agriculture, Chatuchak, Bangkok, Thailand
19-24 Mar 2007	Standard Plant Pest Risk Analysis (PRA) Workshop	RELC International Hotel, Singapore
17-25 May 2007	Workshop on Diagnostics of Key Pest Lepidoptera	Sakaerat Environmental Research Station, Nakhon Ratchasima Province, Thailand and Department of Agriculture, Chatuchuk, Bangkok, Thailand
29-30 May 2007	Livestock Disease & SPS Restrictions: Key Implications for ASEAN Agriculture Workshop	Department of Agriculture Fisheries & Forestry, Edmund Barton Building, Canberra, Australia
12-16 Nov 2007	Training in Integrated Risk Management for Livestock Diseases – Surveillance Workshop	Guoman Hotel, Hanoi, Vietnam
19-20 Nov 2007	SPS Awareness in Animal Health: A workshop for middle managers and the private sector of the ASEAN region	Richmonde Hotel, Manila, Philippines
24-28 Mar 2008	Training in Integrated Risk Management for Livestock Diseases – Risk Analysis Workshop	Cebu City Marriott Hotel, Philippines
5-10 May 2008	Workshop on Diagnostics of Phytophagous Mites (Acari)	Universiti of Malaya, Kuala Lumpur, Malaysia
26-31 May 2008	Standard Plant Pest Risk Analysis (PRA) Workshop	Kiulap Plaza Hotel, Bandar Seri Begawan, Brunei Darussalam
23-27 June 2008	Training in Integrated Risk Management for Livestock Diseases – Zoning Workshop	Siam City Hotel, Bangkok, Thailand
29 June 2008	MTM EpiNet Training in Surveillance Systems	Bangkok, Thailand
3 July 2008	MTM EpiNet Training in Outbreak Investigation	Bangkok, Thailand
4-6 Aug 2008	SPS Awareness Workshop [Plant Health in the Global	Herbarium Bogoriense, Cibinong, Bogor, Indonesia

Date/s	Name of Workshop/Activity	Venue and Country
	Trading Environment: An Introduction to the Role of Specimen-based Pest Lists]	
7-11 Aug 2008	Plant Disease Specimen Preservation, Curation and Data Management Workshop	Herbarium Bogoriense, Cibinong, Bogor, Indonesia
18-20 Aug 2008	SPS Awareness Workshop [Plant Health in the Global Trading Environment: An Introduction to the Role of Specimen-based Pest Lists]	Khon Kaen University, Thailand
21-25 Aug 2008	Arthropod Preservation, Curation and Data Management Workshop	Khon Kaen University, Thailand
1-5 Sep 2008	Workshop on Diagnostics of Seed-borne Rice Diseases	International Rice Research Institute, Philippines (IRRI), Philippines
5-10 Oct 2008	Training in Integrated Risk Management for Livestock Diseases – Consolidation Workshop	Department of Livestock and Fisheries, Ministry of Agriculture and Forestry, Luang Prabang, Lao PDR
17 Jan 2009	Field Staff Training in Outbreak Investigation	Myanmar
25-26 May 2009	ASEAN Regional Diagnostic Network Planning Workshop	Lane Xang Hotel, Vientiane, Lao PDR
1-3 July 2009	MTM EpiNet Training in Geographic Information Systems	Chiang Mai University, Thailand

APPENDIX C – FINAL COST SUMMARY BY SUB-COMPONENT (2004-2009)

Name of project:		SPS Capacity Building Program					Total project funds: \$4,079,600				
Reporting period:		June 2004 - July 2009					Duration of project: 48 months				

APPENDIX C – FINAL COST SUMMARY BY COST CATEGORY (2004-2009)



Name of project:		SPS Capacity Building Program				Total project funds: \$4,079,600		
Reporting period:		June 2004 - July 2009				Duration of project: 48 months		
			Project year 2004-	Project year 2005-	Project year 2006-	Project year 2007-	Project year 2008-	
Expenses	Cost Category	Comments	05	06	07	08 (See Note 1)	09	Total project
	Consultancy fee	See Note 5.	37,320.00	313,965.65	255,995.83	205,545.31	508,828.29	1,321,655.08
	Project/consultant expenses	See Note 4.	0.00	16,459.85	260,754.52	262,534.96	645,183.99	1,184,933.32
	Laboratory equipment & supplies	See Note 6.	0.00	2,971.31	4,909.24	0.00	171,543.85	179,424.40
	Publications	See Note 7.	0.00	252.55	9,088.25	4,033.64	40,232.42	53,606.86
	Official Hospitality		0.00	4,807.46	2,463.91	3,953.33	3,369.79	14,594.49
	Business Catering		0.00	5,428.55	7,977.17	11,727.12	18,065.92	43,198.76
	Public Relations & Marketing		0.00	4,664.18	0.00	159.09	0.00	4,823.27
Program Management								
	Program Staff	See Note 3.	74,189.47	176,102.27	218,819.61	371,595.46	3,895.92	844,602.73
	Office Supplies		46.10	2,743.59	2,486.10	316.22	0.00	5,592.01
	Office Utilities		1,335.64	558.10	26,890.50	0.00	0.00	28,784.24
	Travel	See Note 2.	23,840.13	159,992.41	108,151.21	3,817.93	85,347.14	381,148.82
	Communications		0.00	0.00	7,195.98	100.14	977.58	8,273.70
	Reports		0.00	0.00	0.00	0.00	3,600.00	3,600.00
Total			\$136,731.34	\$687,945.92	\$904,732.32	\$863,783.20	\$1,481,044.90	\$4,074,237.68

NOTE:

1. The expenditure breakdown for 2007-8 differs from that provided in the Annual Report for that financial year. Departmental charge codes for the Program were changed during this period with the result that not all costs were recorded against correct codes.

2. Management travel costs for: 2005-6 include management costs associated with the Study Tour; 2007-8 include costs of Country Focal Points Planning Workshop; and for 2008-9 include costs associated with Program Evaluation.

3. Staff costs in 2008-9 provided by DAFF.

4. Travel, accommodation and incidental costs for workshop participants and trainers are included in project/consultant expenses.

5. Consultancy fees for 2008-9 reflect payments associated with the large number of final reports to AMC.

6. Procurement of laboratory equipment (principally microscopes) endorsed by AusAID but not anticipated in original Program budget.

7. Increase in publication costs in 2008-9 reflects production of SPS booklets and manuals used in integrated disease management training.

APPENDIX D – ACTIVITY PERSONNEL (ANIMAL)

Name	Position	Activity Date/s	Gender	Agency/ Organisation
Dr Angus Cameron	Regional Specialist; Lead trainer/ Facilitator	Lead trainer/ Facilitator for Training in Integrated Risk Management for Livestock Diseases (Surveillance 12-16 Nov 2007; Risk Analysis 24-28 Mar 2008; Zoning 23-27 June 2008 and Consolidation 5-10 Oct 2008) and SPS Animal Health Awareness for Middle Managers 19-20 Nov 2007	M	AusVet Animal Health Services Pty Ltd, Australia
Dr Jenny Hutchison	Trainer/ Facilitator	Trainer/ Facilitator for Training in Integrated Risk Management for Livestock Diseases (Surveillance 12-16 Nov 2007; Risk Analysis 24-28 Mar 2008; Zoning 23-27 June 2008 and Consolidation 5-10 Oct 2008) and SPS Animal Health Awareness for Middle Managers 19-20 Nov 2007	F	AusVet Animal Health Services Pty Ltd, Australia
Dr Carolyn C. Benigno	Regional Specialist; Animal Health Officer; Trainer/ Resource person	Trainer/ Resource person for Training in Integrated Risk Management for Livestock Diseases (Surveillance 12-16 Nov 2007; Risk Analysis 24-28 Mar 2008; Zoning 23-27 June 2008 and Consolidation 5-10 Oct 2008) and SPS Animal Health Awareness for Middle Managers 19-20 Nov 2007	F	Food and Agriculture Organization of the United Nations (FAO) Regional Office for Asia and the Pacific, Bangkok, Thailand
Dr Tri Satya Putri (Tata) Naipospos (Dr Tata Hutabarat)	Directive Board; Trainer/ Resource person	Trainer/ Resource person for Training in Integrated Risk Management for Livestock Diseases (Surveillance 12-16 Nov 2007; Risk Analysis 24-28 Mar 2008; Zoning 23-27 June 2008 and Consolidation 5-10 Oct 2008) and SPS Animal Health Awareness for Middle Managers 19-20 Nov 2007	F	Centre for Indonesian Veterinary Analytical Studies (CIVAS); OIE Regional Coordination Unit
Dr Ronello C. Abila	Regional Specialist; Trainer/ Resource person	Trainer/ Resource person for Training in Integrated Risk Management for Livestock Diseases -(Zoning 23-27 June 2008 and Consolidation 5-10 Oct 2008)	M	OIE Bangkok, SEAFMD program
Mr Neil Andrews	Lead facilitator	Lead facilitator for SPS Barriers to ASEAN Meat Exports 25 Oct 2006 and Livestock Disease & SPS Restrictions 29-30 May 2007	M	International Branch, ABARE
Belinda Sheldrick	Facilitator/ Resource person	Facilitator/ Resource person for SPS Barriers to ASEAN Meat Exports 25 Oct 2006	F	ABARE
Sally Thorpe	Facilitator/ Resource person	Facilitator/ Resource person for Livestock Disease & SPS Restrictions 29-30 May 2007	F	International Branch, ABARE
Suthida Warr	Resource person/ Trainer	Resource person/ Trainer for Livestock Disease & SPS Restrictions 29-30 May 2007	F	International Branch, ABARE
Misha Coleman	Country Manager; Resource person/ Trainer	Resource person/ Trainer for SPS Barriers to ASEAN Meat Exports 25 Oct 2006	F	ACIAR, Australian Embassy, Vietnam
Nguyen Quang Anh	Activity Manager; Resource person/ Trainer	Resource person/ Trainer for SPS Barriers to ASEAN Meat Exports 25 Oct 2006		Economic Governance, AusAID
Dr Polly Cocks	Project Coordinator/ Training Specialist; Lead trainer	Lead trainer for MTM EpiNet Training in Outbreak Investigation 3 July 2008	F	Murdoch University, Western Australia
Dr Peter Black	Principal Research Scientist; Lead trainer	Lead trainer for MTM EpiNet Training in Surveillance Systems 29 June 2008	M	Office of the Chief Veterinary Officer, Department of Agriculture, Fisheries and Forestry, Australia
Dr Kyaw Naing Oo	Trainer/ Resource person	Trainer/ Resource person for Field Staff Training in Outbreak Investigation 17 Jan 2009	M	Livestock Breeding and Veterinary Department
Dr Lin Lin Bo	Research Officer; Trainer/ Resource person	Trainer/ Resource person for Field Staff Training in Outbreak Investigation 17 Jan 2009	F	Livestock Breeding and Veterinary Department, Yangon

APPENDIX D – ACTIVITY PERSONNEL (PLANT)

Name	Position	Activity Date/s	Gender	Agency/ Organisation
Dr Ian Naumann	Director, SPS Capacity Building Program; Lead trainer/ Facilitator	Director from October 2004 to June 2009. Lead trainer/ Facilitator for Data Standards and Information Management 22-23 Aug 2005; SPS Awareness & Arthropod Preservation, Curation and Data Management 24-30 Sep 2005 and 18-25 Aug 2008; SPS Study Tour 8-15 Oct 2005; Plant Pest Risk Analysis (PRA) Train-the-Trainer 14-18 Nov 2005; SPS Awareness for Plant Health 23-25 June 2006; ASEAN Country Focal Points Meeting on 2006-7 SPS CBP Operational Plan 7-8 Aug 2006; Diagnostics of Key Pest Lepidoptera 17-25 May 2007; SPS Awareness & Plant Disease Specimen Preservation, Curation and Data Management 19-26 Jan 2007 and ASEAN Regional Diagnostics Network Planning 25-26 May 2009	M	Office of the Chief Plant Protection Officer, Department of Agriculture, Fisheries and Forestry, Australia
Emma Lumb	Program Coordinator, SPS Capacity Building Program; Trainer/ Resource person	Program Coordinator from October 2004 to November 2007. Trainer/ Resource person for Data Standards and Information Management 22-23 Aug 2005; SPS Study Tour 8-15 Oct 2005; Plant PRA Train-the-Trainer 14-18 Nov 2005; Plant PRA 13-17 Mar 2006; SPS Awareness & Plant Disease Specimen Preservation, Curation and Data Management 24-31 Mar 2006 and 19-26 Jan 2007; ASEAN Country Focal Points Meeting on 2006-7 SPS CBP Operational Plan 7-8 Aug 2006 and SPS Awareness & Arthropod Preservation, Curation and Data Management 15-22 Sep 2006	F	Office of the Chief Plant Protection Officer, Department of Agriculture, Fisheries and Forestry, Australia
Wendy Lee	Program Coordinator, SPS Capacity Building Program	December 2008 to June 2009	F	Office of the Chief Plant Protection Officer, Department of Agriculture, Fisheries and Forestry, Australia
Janet Wheeler	Policy Officer; Trainer/ Resource person	Trainer/ Resource person for SPS Awareness & Arthropod Preservation, Curation and Data Management 15-22 Sep 2006	F	Office of the Chief Plant Protection Officer, Department of Agriculture, Fisheries and Forestry, Australia
Dr Soetikno S. Sastroutomo	Technical Secretary; Workshop Logistics Coordinator, Trainer/ Resource person	Workshop Logistics Coordinator and Trainer/ Resource person for SPS Awareness & Arthropod Preservation, Curation and Data Management 24-30 Sep 2005, 15-22 Sep 2006 and 18-25 Aug 2008; Diagnostics of Plant-sucking Bugs (Hemiptera) 21-25 Nov 2005; Diagnostics of Citrus Greening Disease (HLB) 20-24 Mar 2006; SPS Awareness & Plant Disease Specimen Preservation, Curation and Data Management 24-31 Mar 2006, 19-26 Jan 2007 and 4-11 Aug 2008; SPS Awareness for Plant Health 23-25 June 2006; ASEAN Country Focal Points Meeting on 2006-7 SPS CBP Operational Plan 7-8 Aug 2006; Diagnostics of Phytophagous Mites (Acarina) 5-10 May 2008; Plant PRA 13-17 Mar 2006, 19-24 March 2007 and 26-31 May 2008; Diagnostics of Plant Pathogenic Fungi 29 Jan-2 Feb 2007; Diagnostics of Key Pest Lepidoptera 17-25 May 2007 and ASEAN Regional Diagnostics Network Planning 25-26 May 2009	M	ASEANET, The South East Asian LOOP of BioNET International, Malaysia

Name	Position	Activity Date/s	Gender	Agency/ Organisation
Dr Keng-Yeang Lum	Chairperson; Lead trainer/ Resource person	Lead trainer for SPS Awareness & Arthropod Preservation, Curation and Data Management 24-30 Sep 2005, 15-22 Sep 2006 and 18-25 Aug 2008; Diagnostics of Plant-sucking Bugs (Hemiptera) 21-25 Nov 2005; Diagnostics of Citrus Greening Disease (HLB) 20-24 Mar 2006; Plant PRA 19-24 Mar 2007 and 26-31 May 2008; SPS Awareness & Plant Disease Specimen Preservation, Curation and Data Management 24-31 Mar 2006 and 4-11 Aug 2008; SPS Awareness for Plant Health 23-25 June 2006 and ASEAN Country Focal Points Meeting on 2006-7 SPS CBP Operational Plan 7-8 Aug 2006	M	ASEANET, The South East Asian LOOP of BioNET International and CABI Southeast & East Asia (CABI SEA), Malaysia
Dr Graeme Evans	Technical Director; Trainer/ Resource person	Trainer/ Resource person for SPS Awareness & Arthropod Preservation, Curation and Data Management 24-30 Sep 2005; Plant PRA Train-the-Trainer 14-18 Nov 2005; SPS Awareness & Plant Disease Specimen Preservation, Curation and Data Management 24-31 Mar 2006; SPS Awareness for Plant Health 23-25 June 2006; Plant PRA 19-24 Mar 2007 and ASEAN Regional Diagnostics Network Planning 25-26 May 2009	M	NZAID Phytosanitary Capacity Building Project
Dr Roger Shivas	Lead trainer	Lead trainer for SPS Awareness & Plant Disease Specimen Preservation, Curation and Data Management 24-31 Mar 2006, 19-26 Jan 2007 and 4-11 Aug 2008 and Diagnostics of Plant Pathogenic Fungi 29 Jan - 2 Feb 2007	M	Queensland Department of Primary Industries and Fisheries, Australia
Professor John Thomas	Trainer/ Resource person	Trainer/ Resource person for SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management 24-31 Mar 2006, 19-26 Jan 2007 and 4-11 Aug 2008 and Diagnostics of Plant Pathogenic Fungi 29 Jan - 2 Feb 2007	M	Queensland Department of Primary Industries and Fisheries, Australia
Dr Dean Beasley	Trainer/ Resource person	Trainer/ Resource person for SPS Awareness & Plant Disease Specimen Preservation, Curation and Data Management 24-31 Mar 2006, 19-26 Jan 2007 and 4-11 Aug 2008 and Diagnostics of Plant Pathogenic Fungi 29 Jan - 2 Feb 2007	M	Queensland Department of Primary Industries and Fisheries, Australia
Dr Anthony Young	Resource person/ Trainer	Resource person/ Trainer for SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management 19-26 Jan 2007	M	Queensland Department of Primary Industries and Fisheries, Australia
Tom Marney	Resource person/ Trainer	Resource person/ Trainer for SPS Awareness & Plant Disease Specimen Preservation, Curation and Data Management 19-26 Jan 2007 and Diagnostics of Plant Pathogenic Fungi 29 Jan - 2 Feb 2007	M	Queensland Department of Primary Industries and Fisheries, Australia
Dr Mal Ryley	Resource person/ Trainer	Resource person/ Trainer for Diagnostics of Plant Pathogenic Fungi 29 Jan - 2 Feb 2007	M	Queensland Department of Primary Industries and Fisheries, Australia
Dr Jose Liberato	Resource person/ Trainer	Resource person/ Trainer for Diagnostics of Plant Pathogenic Fungi 29 Jan - 2 Feb 2007	M	Queensland Department of Primary Industries and Fisheries, Australia
Dr Ben Mullen	Project Manager; Resource person/ Trainer	Resource person/ Trainer for SPS Awareness & Plant Disease Specimen Preservation, Curation and Data Management 24-31 Mar 2006 and ASEAN Regional Diagnostics Network Planning 25-26 May 2009	M	NZAID Phytosanitary Capacity Building Project, UniQuest Pty Ltd, Australia
Dr Pyone Pyone Kyi	Assistant Manager; Resource person/ Trainer	Resource person/ Trainer for Plant Disease Specimen Preservation, Curation and Data Management 4-6 Aug 2008	F	Plant Protection Division, Myanma Agriculture Service, Ministry of Agriculture and Irrigation
Dr Pornpimon Athipunyakom	Local presenter/ Coordinator	Local presenter/ Coordinator for SPS Awareness & Plant Disease Specimen Preservation, Curation and Data Management 19-26 Jan 2007 and Diagnostics of Plant Pathogenic Fungi 29 Jan - 2 Feb 2007	F	Department of Agriculture, Thailand

Name	Position	Activity Date/s	Gender	Agency/ Organisation
Woothisak Butranu	Local presenter/ Coordinator	Local presenter/ Coordinator for SPS Awareness & Plant Disease Specimen Preservation, Curation and Data Management 19-26 Jan 2007 and Diagnostics of Plant Pathogenic Fungi 29 Jan - 2 Feb 2007	M	Department of Agriculture, Thailand
Ms Sraserang	Local presenter/ Coordinator	Local presenter/ Coordinator for SPS Awareness & Plant Disease Specimen Preservation, Curation and Data Management 19-26 Jan 2007 and Diagnostics of Plant Pathogenic Fungi 29 Jan - 2 Feb 2007	F	Department of Agriculture, Thailand
Dr Margaret Schneider	Lead trainer	Lead trainer for Arthropod Preservation, Curation and Data Management 21-25 Aug 2008	F	University of Queensland, Australia
Gregory Daniels	Trainer/ Resource person	Trainer/ Resource person for Arthropod Preservation, Curation and Data Management 21-25 Aug 2008	M	University of Queensland, Australia
Dr Yupa Hanboonsong	Director/ Associate Professor in Entomology; Trainer/ Resource person	Trainer/ Resource person for Arthropod Preservation, Curation and Data Management 21-25 Aug 2008	F	Office of Agriculture International, Faculty of Agriculture, Khon Kaen University, Thailand
Dr Tasanee Jamjanya	Assistant Professor in Entomology; Resource person/ Trainer	Resource person/ Trainer for Arthropod Preservation, Curation and Data Management 21-25 Aug 2008		Faculty of Agriculture, Khon Kaen University, Thailand
Dr Duangrat Thongphak	Resource person/ Trainer	Resource person/ Trainer for Arthropod Preservation, Curation and Data Management 21-25 Aug 2008		Faculty of Agriculture, Khon Kaen University, Thailand
Prakaijan Nimkingrat	Resource person/ Trainer	Resource person/ Trainer for SPS Awareness & Arthropod Preservation 21-25 Aug 2008	F	Faculty of Agriculture, Khon Kaen University, Thailand
Chutinun Choosai	Entomologist; Resource person/ Trainer	Resource person/ Trainer for SPS Awareness & Arthropod Preservation 18-25 Aug 2008	F	Faculty of Agriculture, Khon Kaen University, Thailand
Nopachon Tubtim	Resource person/ Trainer	Resource person/ Trainer for Arthropod Preservation, Curation and Data Management 21-25 Aug 2008	M	Faculty of Agriculture, Khon Kaen University, Thailand
Dr Supratra Dolsopon	Entomologist; Resource person/ Trainer	Resource person/ Trainer for Arthropod Preservation, Curation and Data Management 21-25 Aug 2008		Khon Kaen Field Crop Research Center, Thailand
Dr Sri Suharni Siwi	Professor Research; Resource person/ Trainer	Resource person/ Trainer for Arthropod Preservation, Curation and Data Management 26-30 Sep 2005		Indonesian Agricultural Biotechnology and Genetic Resources Research Institute
Mr Supandi	Resource person/ Trainer	Resource person/ Trainer for Arthropod Preservation, Curation and Data Management 26-30 Sep 2005	M	Agency for Agricultural Quarantine, Ministry of Agriculture, Indonesia
Professor Datin Dr. Hj. Maryati Mohamed	Director; Resource person/ Trainer	Resource person/ Trainer for Arthropod Preservation, Curation and Data Management 15-22 Sep 2006	M	Institute for Tropical Biology and Conservation, Malaysia
Dr Homathevi Rahman	Resource person/ Trainer	Resource person/ Trainer for Arthropod Preservation, Curation and Data Management 18-22 Sept 2006		Institute for Tropical Biology and Conservation, Malaysia
Dr Linda Corner	Counsellor, Agriculture; Trainer/ Resource person	Resource person/ Trainer for SPS Awareness for Plant Health 23-25 June 2006	F	Australian Embassy, Thailand
Kanchana Sillpee	Resource person/ Trainer	Resource person/ Trainer for SPS Awareness for Plant Health 23-25 June 2006		Thailand
Dr Adrian Harris	Manager; Trainer/ Resource person	Resource person/ Trainer for PRA Train-the-Trainer Workshop 14-18 Nov 2005	M	Plant Biosecurity, Biosecurity Australia, Department of Agriculture, Fisheries and Forestry, Australia
Dr Lyn Liyanage	Senior Policy Officer; Trainer/ Resource person	Trainer/ Resource person for Plant PRA 13-17 Mar 2006	M	Plant Biosecurity, Biosecurity Australia, Department of Agriculture, Fisheries and Forestry, Australia

Name	Position	Activity Date/s	Gender	Agency/ Organisation
Dr Ananda Samarakoon	Senior Policy Officer; Trainer/ Resource person	Trainer/ Resource person for Plant PRA 13-17 Mar 2006	M	Plant Biosecurity, Biosecurity Australia, Department of Agriculture, Fisheries and Forestry, Australia
Dr Lily Eng	Senior Research Officer (Plant Pathologist); Trainer/ Resource person	Trainer/ Resource person for Diagnostics of Citrus Greening Disease (HLB) 20-24 Mar 2006 and Plant PRA 26-31 May 2008	F	Agricultural Research Centre, Semongok, Malaysia
Megir Gumbek	Senior Research Officer (Entomologist); Resource person/ Trainer	Resource person/ Trainer for Diagnostics of Citrus Greening Disease (HLB) 20-24 Mar 2006	F	Agricultural Research Centre, Semongok, Malaysia
Dr Supranee Impithuksa	Deputy Director-General; Trainer/ Resource person	Trainer/ Resource person for Data Standards and Information Management 22-23 Aug 2005		Department of Agriculture, Thailand
Asna Booty Othman	Trainer/ Resource person	Trainer/ Resource person for Data Standards and Information Management 22-23 Aug 2005	F	International Centre for Management of Pest Fruit Flies (Regional Office), Malaysia
Mokhtar Idrus	Resource person/ Trainer	Resource person/ Trainer for Data Standards and Information Management 22-23 Aug 2005	M	Crop Protection and Plant Quarantine Division, Department of Agriculture, Malaysia
Dr S. Vijaysegaran	Senior Research Fellow; Resource person/ Trainer	Resource person/ Trainer for Data Standards and Information Management 22-23 Aug 2005		International Centre for Management of Pest Fruit Flies, Australian School of Environmental Studies, Nathan Campus, Griffith University, Australia
Dr Murray Fletcher	Principal Research Scientist; Lead trainer	Lead trainer for Diagnostics of Plant-sucking Bugs (Hemiptera) 21-25 Nov 2005	M	Orange Agriculture Institute, NSW Department of Primary Industries, Australia
Dr Mali Malipatil	Principal Systematic Entomologist Section Leader; Trainer/ Resource person	Trainer/ Resource person for Diagnostics of Plant-sucking Bugs (Hemiptera) 21-25 Nov 2005	M	Taxonomy, Department of Primary Industries, Knoxfield, Victoria
Dr Marianne Horak	Lead trainer	Lead trainer for Diagnostics of Key Pest Lepidoptera 17-25 May 2007	F	CSIRO Entomology, Australia
Dr Andreas Zwick	Trainer/ Resource person	Trainer/ Resource person for Diagnostics of Key Pest Lepidoptera 17-25 May 2007	M	CSIRO Entomology, Australia
Dr Hari Sutrisno	Resource person/ Trainer	Resource person/ Trainer for Diagnostics of Key Pest Lepidoptera 17-25 May 2007	M	Museum Zoologicum Bogoriense, Cibinong, Bogor, Indonesia
Dr Pinkaew Nantasak	Entomologist; Resource person/ Trainer	Resource person/ Trainer for Diagnostics of Key Pest Lepidoptera 17-25 May 2007		Kasetsart University, Thailand
Dr Zhi-Qiang Zhang	Researcher & Curator of Acari; Lead trainer	Lead trainer for Diagnostics of Phytophagous Mites (Acarina) 5-10 May 2008	M	Landcare Research New Zealand
Yusof Othman	Assistant Director; Trainer/ Resource person	Trainer/ Resource person for Diagnostics of Phytophagous Mites (Acarina) 5-10 May 2008	M	Crop Protection and Plant Quarantine Division, Department of Agriculture, Malaysia
Maria Angeli G. Maghuyop	Course Facilitator and Training Specialist; Resource person/ Trainer	Resource person/ Trainer for Diagnostics of Seed-borne Rice Diseases 1-5 Sept 2008	F	Training Center, International Rice Research Institute (IRRI), Philippines
Dr Casiana M. Vera Cruz	Senior Scientist, Plant Pathology; Lead trainer	Lead trainer for Diagnostics of Seed-borne Rice Diseases 1-5 Sept 2008	F	Plant Breeding, Genetics and Biotechnology Division, IRRI, Philippines
Patria G. Gonzales	Manager; Trainer/ Resource person	Trainer/ Resource person for Diagnostics of Seed-borne Rice Diseases 1-5 Sept 2008	F	Seed Health Unit, IRRI, Philippines
Carlos C. Helma	Assistant Scientist; Trainer/ Resource person	Trainer/ Resource person for Diagnostics of Seed-borne Rice Diseases 1-5 Sept 2008	M	Seed Health Unit, IRRI, Philippines

Name	Position	Activity Date/s	Gender	Agency/ Organisation
Professor Dirk de Waele	Nematologist; Trainer/ Resource person	Trainer/ Resource person for Diagnostics of Seed-borne Rice Diseases 1-5 Sept 2008	M	Crop and Environmental Sciences Division, IRRI, Philippines
Dr Silvino Merca	Trainer/ Resource person	Trainer/ Resource person for Diagnostics of Seed-borne Rice Diseases 1-5 Sept 2008	M	Plant Breeding, Genetics and Biotechnology Division, IRRI, Philippines
Isabelita Oña	Associate Scientist; Trainer/ Resource person	Trainer/ Resource person for Diagnostics of Seed-borne Rice Diseases 1-5 Sept 2008	F	Seed Health Unit, IRRI, Philippines
Dr T.W. Mew	Former Scientist and Head; Trainer/ Resource person	Trainer/ Resource person for Diagnostics of Seed-borne Rice Diseases 1-5 Sept 2008	M	Plant Breeding, Genetics and Biotechnology Division, IRRI, Philippines
Maria Ymber Reveche	Acting Manager/ Researcher; Trainer/ Resource person	Trainer/ Resource person for Diagnostics of Seed-borne Rice Diseases 1-5 Sept 2008	F	Gene Array and Molecular Marker Laboratory, Plant Breeding, Genetics and Biotechnology Division, IRRI, Philippines
Dr Trevor Crosby	Principal Entomologist; Facilitator	Facilitator for ASEAN Regional Diagnostics Network Planning 25-26 May 2009	M	NZAID Phytosanitary Capacity Building Project, Landcare Research New Zealand
Dr Eric McKenzie	Principal Pathologist; Facilitator	Facilitator for ASEAN Regional Diagnostics Network Planning 25-26 May 2009	M	NZAID Phytosanitary Capacity Building Project, Landcare Research New Zealand
Ms Suzanne Brangwin	Deputy Project Manager; Coordinator/ Resource person	Coordinator/ Resource person for ASEAN Regional Diagnostics Network Planning 25-26 May 2009	F	NZAID Phytosanitary Capacity Building Project, UniQuest Pty Ltd, Australia
Dr Gary Kong	Principal Plant Pathologist; Resource person	Resource person for ASEAN Regional Diagnostics Network Planning 25-26 May 2009	M	Plant Science, Delivery, Queensland Department of Primary Industries and Fisheries, Toowoomba, Australia
Mr Michael Thompson	Remote Microscope Support Officer; Resource person	Resource person for ASEAN Regional Diagnostics Network Planning 25-26 May 2009	M	CSIRO Entomology, Australia

APPENDIX D – ASEAN COUNTRY FOCAL AND CONTACT POINT LIST

Preferred name	Name	Position	Email	Country	Gen- CFP	P-CFP	A-CFP	P- SubCFP	A- SubCFP	CP-g	CP-a	CP-p	Postal Address	Fax	CC
Mr Jamal	Jamalludin Bin Haji Mohd Yusoff	Senior Agricultural Officer	jamal_yusoff@agriculture.gov.bn	Brunei Darussalam	N	N	N	N	Y	N	N	Y	Crop Development Division, Department of Agriculture, Ministry of Industry and Primary Resources, Bandar Seri Begawan	673-2-661354	
Dr Suon Sothoeun	Suon Sothoeun	Deputy Director	sothoeundahp@online.com.kh	Cambodia	N	N	Y	N	Y	N	N	N	Department of Animal Health and Production, Ministry of Agriculture, Forestry and Fisheries, 371 Street, Trea Village, Meanchey Commune, Meanchey District, Phnom Penh	855-023 991 839	
Dr Hean Vanhan	Hean Vanhan	Deputy Director	heanvanhan@gmail.com	Cambodia	N	Y	N	N	N	N	N	N	General Directorate of Agriculture (GDA), Ministry of Agriculture, Forest and Fisheries (MAFF), No. 200, Norodom Blvd., Sangkat Tonle Basac, Chamcar Maon, Phnom Phen	855-23216655	
Mr Chhun Hy	Heng Chhun Hy	Vice Chief	kampongchnang@yahoo.com	Cambodia	N	Y	N	N	N	N	N	N	Plant Protection and Phytosanitary Inspection Office, Plant Protection Service, Department of Agronomy and Agricultural Land Improvement, Ministry of Agriculture, Fisheries and Forestry, 10 Monireth Street, Chamcar Morn District, Phnom Penh	855-23369966	
Dr Rasyid	Kisman A Rasyid	Director	pusatkh@indo.net.id ; kisman_arasvid@yahoo.com	Indonesia	N	N	Y	N	N	N	N	N	Centre for Animal Quarantine, 5th Floor, Building E, Jl. Harsono RM No. 3, Ragunan, Jakarta Selatan 12550	62-21 7816484	
Ir. Hari Priyono	Hari Priyono	Director General	casps@indo.net.id ; hari@deptan.go.id	Indonesia	N	Y	N	N	N	N	N	N	Agricultural Quarantine Agency, Jl. Harsono RM. No. 3, Building E, 5th Floor, Ragunan-Jakarta 12550	62-21 7816481	Dr Suwanda, Director, Centre for Plant Quarantine, Indonesia Agency for Agricultural Quarantine, Ministry of Agriculture (MoA), Jakarta, Indonesia
Mr Phaydy	Phaydy Phixaysarakham	Director of Agricultural Regulatory Division	doa@laotel.com	Lao PDR	N	Y	N	N	N	N	N	N	Department of Agriculture, Ministry of Agriculture and Forestry, Lane Xang Avenue, Patuxay Square, PO Box 811, Vientiane	856-21 452 349	
Dr Khambounheuang	Bounkhouang Khambounheuang	Director General	sulaodf@laotel.com ; laos_difmat@yahoo.com	Lao PDR	N	N	Y	N	Y	N	N	N	Department of Livestock and Fisheries, Ministry of Agriculture and Forestry, PO Box 811, Vientiane	856-21 415 674	
Dr Abdul Aziz Mangkat	Abdul Aziz Mangkat	Director General	azizm@iph.gov.my	Malaysia	N	N	Y	N	N	N	N	N	Department of Veterinary Services (DVS), Ministry of Agriculture and Agro-based Industry, Wisma Tani, Podium Block 1A, Lot 4G1, Precinct 4, Federal Government Administrative Centre, 62630 Putrajaya		
Ms Wan Normah Wan Ismail	Mat Hassan Othman	Director	wanis@doa.gov.my ; wann54@yahoo.com	Malaysia	N	Y	N	N	N	N	N	N	Crop Protection and Plant Quarantine Division, Department of Agriculture Malaysia, Jalan Sultan Salahuddin, 50632, Kuala Lumpur	603-2691 3530	
U Aye Tun	Aye Tun	Head of Division	ppmas.moai@mptmail.net.mm	Myanmar	N	Y	N	N	N	N	N	N	Plant Protection Division, Bayintnaung Road, Gyogon, Insein PO 11011, Yangon, Union of Myanmar	95-01-644019	
Mr Maung Maung Nyunt	Maung Maung Nyunt	Director General	lbvd@mptmail.net.mm ; dqibvd@lbvd.gov.mm	Myanmar	N	N	Y	N	Y	N	N	N	Livestock Breeding and Veterinary Department (HQ) Compound, Ministry of Livestock and Fisheries, Insein, Yangon	95-01-642927	
Dr Serrano	Segfredo R. Serrano	Undersecretary for Policy and Planning	flanera72@gmail.com	Philippines	Y	N	N	N	Y	N	N	N	3F Department of Agriculture, Elliptical Road, Diliman 1100, Quezon City	632-904084	
Dr Ong	Keng-Ho Ong	Deputy Director (Plant Health)	ong_keng_ho@ava.gov.sg	Singapore	N	N	N	N	N	Y	N	N	Agri-food and Veterinary Authority of Singapore, 5 Maxwell Road, Tower Block, MND Complex, 068190	65-6220 6068 / 6316 1090	
Mr Charnnarongkul	Somchai Charnnarongkul	Deputy Secretary-General	somchaic@acfs.go.th ; tosomchai@yahoo.com ; somchai@acfs.go.th	Thailand	Y	N	N	N	Y	N	N	N	National Bureau of Agricultural Commodities and Food Standards, Ministry of Agriculture and Cooperatives, 3 Rajdamnern Nok Ave, Bangkok 10200	622-803899	Mr Paisan, Head, Quarantine Kasetsart University, Thailand; Mr Udorn Unahawutti, Director, Plant Quarantine Research Group, Thailand
Ms Nguyen	Nguyen Thu Thuy	Vice Head of Planning Division	thuynt299@yahoo.com	Vietnam	N	N	N	N	Y	N	N	N	Department of Animal Health, Ministry of Agriculture and Rural Development (MARD), 15/78 Giai Phong Street, Hanoi	84-4-38695961	
Mr Tru	Dam Quoc Tru	Deputy Director General	trudq@fpt.vn	Vietnam	N	N	N	Y	N	N	N	N	Plant Protection Department, Ministry of Agriculture and Rural Development (MARD), 149 Ho Duc Di Street, Hanoi	84-4-8574719 / 5330043	
Ms Hoang Thi Dzung	Hoang Thi Dzung	Deputy Director General	htdung@netnam.vn ; dunght.htgt@mard.gov.vn	Vietnam	Y	N	N	N	Y	N	N	N	International Co-operation Department, Ministry of Agriculture and Rural Development (MARD), 2 Ngoc Ha Ba Dinh, Hanoi	84-4-7330752	Dr Dam Quoc Tru, Plant Protection Department, MARD, Vietnam

Gen-CFP = general Country Focal Point; P-CFP = Plant CFP; A-CFP = Animal CFP; P-SubCFP = Plant SubCFP; A-SubCFP = Animal SubCFP; CP = Contact point (for non-focal countries; a = animal, p = plant, g = general)

APPENDIX E – ACTIVITY REPORTS

The Department of Agriculture, Fisheries & Forestry (as the Australian Managing Contractor (AMC) for the SPS Capacity Building Program) has prepared and submitted the following reports to AusAID:

Date	Description
July 2005	Sanitary and Phytosanitary (SPS) Capacity Building Annual [Operational] Plan 2005 and M&E and Risk Management Framework
12 Oct 2005	Informal Report covering the period up to 12 October 2005.
24 Jan 2006	6-month Report and Financial Statement covering the period: November 2004 – December 2005
31 Jan 2006	Simplified Monitoring Toolbox (SMT) Corporate Report
4 Feb 2006	SPS Capacity Building Annual [Operational] Plan 2005-6
June 2006	6-month Report and Financial Statement covering February – June 2006 (Year 1 of Program activities)
31 Oct 2006	6-month Report covering July – October 2006 (Year 2 of Program activities)
27 July 2006	SPS Capacity Building Annual [Operational] Plan 2006-7
June 2007	Annual Report, Financial Statement and Report for Program Success Against M&E Framework covering July 2006 – June 2007 (Year 2 of Program activities)
15 June 2007	SPS Capacity Building Annual [Operational] Plan 2007-8
March 2008	Interim Report, Financial Statement and Report for Program Success Against M&E Framework covering July 2007 – February 2008 (Year 3 of Program activities)
26 May 2008	Mid-Term Review of Australia's regional 'Sanitary and Phytosanitary Capacity Building Program' (SPSCBP) ¹
31 July 2008	Annual Report and Financial Statement covering July 2007 – July 2008 (Year 3 of Program activities)
31 July 2008	SPS Capacity Building Annual [Operational] Plan 2008-9
28 Feb 2009	6-month Report and Financial Statement covering August 2008 – February 2009 (Year 4 of Program activities)
9 July 2009	Draft Activity Completion Report (including Appendices B and G)

¹ Report prepared by an AusAID Mid-Term Review team following input from the AMC and stakeholder meetings.

APPENDIX E – PUBLICATION LIST

AusVet Animal Health Services (2009). *Livestock Disease Management Essentials Risk Analysis* (in press)

AusVet Animal Health Services (2009). *Livestock Disease Management Essentials Surveillance* (in press)

AusVet Animal Health Services (2009). *Livestock Disease Management Essentials Zoning* (in press)

Anon. The WTO Sanitary and Phytosanitary (SPS) Agreement: Why you need to know... (English, Bahasa Indonesia, Vietnamese and Khmer versions)¹, 19 pp.
<http://www.daff.gov.au/animal-plant-health/plant/publications/sps>

Thorpe, S., Warr, S. & Andrews, N. (2007). *Barriers to ASEAN Meat Exports: Economic Impacts of Disease Outbreaks and Policy Responses*. Australian Bureau of Agricultural and Resource Economics (ABARE) Research Report 07.20: Canberra. 58 pp.
http://www.abareconomics.com/publications_html/livestock/livestock_07/asean07_report.pdf

Thorpe, S., Warr, S. & Andrews, N. (2007). *ASEAN Meat Exports*. ABARE Report prepared for AusAID. ABARE: Canberra. 21 pp.

¹ Lao and Thai versions are in press.

APPENDIX F – EQUIPMENT PROCUREMENT LIST

Delivery Destination	Description of Equipment			
	Stereo Microscope	Compound Microscope	Digital camera for imaging	Digital camera & console for remote diagnostics
Department of Agriculture, Bangkok, Thailand	1 × Leica M165 C		1 × Leica DFC420	1 × Nikon DS-Fi1-L2
Plant Protection Centre, Salakham, Vientiane, Lao PDR	2 × Leica M125			
University of Lao, Vientiane, Lao PDR	3 × Leica M80	1 × Leica DM2500 M	1 × Leica DFC420	1 × Nikon DS-Fi1-L2
Ministry of Agriculture, Forestry and Fisheries (MAFF), Phnom Penh, Cambodia	2 × Leica M125	1 × Leica DM2500 M	1 × Leica DFC420	1 × Nikon DS-Fi1-L2
Ministry of Agriculture and Rural Development (MARD) Diagnostics Laboratory, Hanoi, Vietnam	1 × Leica M165 C	1 × Leica DM2500 M		
ASEANET, Serdang, Kuala Lumpur, Malaysia		1 × Leica DM2500 M		

APPENDIX G – CAPACITY BUILDING (ANIMAL) - CAMBODIA

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Heng Morany	SPS Awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	F	Deputy Chief	Veterinary Public Health Office
Nget Kiry	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering surveillance, Risk Analysis, Zoning and Consolidation	M	Vice Chief, Epidemiology Unit	Department of Animal Health and Production
Pich Peda	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	M	Technical Officer	Department of Animal Health and Production
So Thavrith	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	M	Plant Pathology Unit	Plant Protection and Phytosanitary Inspection Office, Department of Agronomy and Agricultural Land Improvement, Ministry of Agriculture, Forestry and Fisheries
Dr Suon Sothoeun	Livestock Trade Analysis	Short-term training in SPS Barriers to ASEAN Meat Exports	M	Deputy Director	Department of Animal Health and Production, Ministry of Agriculture, Forestry and Fisheries
Tep Vichet Muny	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	M	Chief Office	Animal Health and Production Office, Kompong Speu Province
Than Sovyra	SPS Awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	M	Chief	International Cooperation

APPENDIX G – CAPACITY BUILDING (ANIMAL) - INDONESIA

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Dr A. Rasyid Kisman	Livestock Trade Analysis	Short-term training in SPS Barriers to ASEAN Meat Exports and Livestock Disease & SPS Restrictions	M	Director	Center for Animal Quarantine, Agency for Agriculture Quarantine
Dr Etty Wuryaningsih	Livestock Trade Analysis	Short-term training in SPS Barriers to ASEAN Meat Exports and Livestock Disease & SPS Restrictions			Directorate of Veterinary Public Health/ Directorate General of Livestock Services, Department of Agriculture
Dr Hardiman	Livestock Trade Analysis	Short-term training in SPS Barriers to ASEAN Meat Exports			Division for Animal Quarantine Import
Mira Hartati	SPS awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	F	Head	Division of Technique and Method Animal Quarantine
Dr Rina Aulia Barus	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis and Zoning	F	Veterinary Officer	Departemen Pertanian [Ministry of Agriculture]
Su Jarwanto	SPS awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	M	Head	Division of Import Animal Quarantine
Dr Syafrison bin Idris	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	M	Veterinary Officer	Departemen Pertanian [Ministry of Agriculture]
Dr Vitasari Safitri	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	F	Veterinary Officer	Departemen Pertanian [Ministry of Agriculture]

APPENDIX G – CAPACITY BUILDING (ANIMAL) - LAO PDR

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Phanthavong Vongsamphanh	Livestock Trade Analysis	Short-term training in Livestock Disease & SPS Restrictions	M		Department of Livestock and Fisheries
Dr Phouth Inthavong	Livestock Trade Analysis, Surveillance, Risk Analysis, Zoning	Short-term training in SPS Barriers to ASEAN Meat Exports and Livestock Disease & SPS Restrictions; Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	M	Veterinary Officer	National Animal Health Centre, Department of Livestock and Fisheries
Phouvong Soukvilay	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	F	Technical of Animal Checkpoint	Department of Agriculture and Forestry
Seng Phet Chanthasen	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	M	Chief of Animal Checkpoint	Department of Agriculture and Forestry
Sounthone Vongthilath	SPS Awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	M	Senior Technical Officer	

APPENDIX G – CAPACITY BUILDING (ANIMAL) - MALAYSIA

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Dr Norlizan Md Nor	Livestock Trade Analysis	Short-term training in Livestock Disease & SPS Restrictions			Livestock Industry Development Division, Department of Veterinary Services
Dr P Loganathan Periathamby	Livestock Trade Analysis, SPS Awareness	Short-term training in SPS Barriers to ASEAN Meat Exports, Livestock Disease & SPS Restrictions and SPS Animal Health Awareness for Middle Managers	M	Head	Livestock Industry Development Division, Department of Veterinary Services
Dr Roosevien Farida Nilawati Bt. Rachmat	GIS	Short-term training in GIS for Animal Health Management	F	Veterinary Officer	Department of Veterinary Services, Ministry of Agriculture and Agro-Based Industry
Mr Kum Wah Chang	GIS	Short-term training in GIS for Animal Health Management	M	Research Officer	Department of Veterinary Services, Ministry of Agriculture and Agro-Based Industry

APPENDIX G – CAPACITY BUILDING (ANIMAL) - MYANMAR

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Dr Hlaing Win	SPS Awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	M	Quarantine Officer (Research Officer)	Livestock Breeding and Veterinary Department, Airport Quarantine Station
Dr Khin Maung Maung	Livestock Trade Analysis	Short-term training in Livestock Disease & SPS Restrictions			Livestock Breeding and Veterinary Department, Ministry of Livestock and Fisheries
Dr Khin Than Oo	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	F	Research Officer	Diagnostic Laboratory, Livestock Breeding and Veterinary Department, Yangon
Dr Lin Lin Bo	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	F	Research Officer	Livestock Breeding and Veterinary Department, Yangon
Maung Maung Nyunt	SPS Awareness	Short-term training during SPS Study Tour	M	Director General	Livestock Breeding and Veterinary Department, Ministry of Livestock and Fisheries
Dr Nyan Lin	SPS Awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	M	Assistant Director	Livestock Breeding and Veterinary Department, Procurement Unit
Dr Ohn Kyaw	Livestock Trade Analysis	Short-term training in SPS Barriers to ASEAN Meat Exports			Livestock Breeding and Veterinary Department, Yangon
Dr Win Maung	Livestock Trade Analysis	Short-term training in Livestock Disease & SPS Restrictions			Livestock Breeding and Veterinary Department, Ministry of Livestock and Fisheries
Dr Zaw Lun Aung	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	M	Deputy Veterinary Officer	Livestock Breeding and Veterinary Department, Yangon
Dr Naw Hser Nwee	GIS	Short-term training in GIS for Animal Health Management	F	Research Officer (FMD Section)	Livestock Breeding & Veterinary Department, Yangon
Dr Khine Khine Yi	GIS	Short-term training in GIS for Animal Health Management	F	Veterinary Officer (Planning Section)	Livestock Breeding & Veterinary Department, Yangon
Dr Kyaw Naing Oo	GIS	Short-term training in GIS for Animal Health Management	M	PhD Student	Murdoch University, Western Australia

APPENDIX G – CAPACITY BUILDING (ANIMAL) - PHILIPPINES

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Dr Annie Quitan Bares	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	F	Senior Agriculturist	Department of Agriculture
Dr Arlene Asteria Villa Vytiaco	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	F	Officer-in-Charge, Veterinary Quarantine and Inspection Services Section	Bureau of Animal Industry
Balgamel C. Crooc	Livestock Trade Analysis	Short-term training in Livestock Disease & SPS Restrictions	M		National Veterinary Quarantine Service, National Meat Inspection Service
Garry M. Arvesu	SPS Awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	M	Senior Agriculturist	National Veterinary Quarantine Services, Bureau of Animal Industry
Dr Gilbert T. Empedrad	SPS Awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	M	Supervisor-Veterinarian	Department of Agriculture, National Meat Inspection Service
Ma. Elizabeth D. Callanta	SPS Awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	F	Head	Planning, Monitoring and Evaluation Division
Dr Norberto A. Nival	SPS Awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	M	Officer-In-Charge	National Meat Inspection Service, Meat Import-Export Assistance and Inspection Division
Pedro Ocampo	Livestock Trade Analysis	Short-term training in SPS Barriers to ASEAN Meat Exports and Livestock Disease & SPS Restrictions	M		GMA Livestock Program, Department of Agriculture
Dr Reildrin G. Morales	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	M	Senior Agriculturist	Bureau of Animal Industry
Teresita M. Pascual	SPS Awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	F	CEO and General Manager	Cecilia Stock Farms Inc.

APPENDIX G – CAPACITY BUILDING (ANIMAL) - THAILAND

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Dr Bhanupong Nidhiprabah	Livestock Trade Analysis	Short-term training in SPS Barriers to ASEAN Meat Exports and Livestock Disease & SPS Restrictions		Associate Professor	Faculty of Economics, Thammasat University
Choompon Bunrod	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	M	Head of Health Development	Lopburi Provincial Livestock Office
Kattaporn Poopej	SPS Awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	M	Head	Regional office on Production Standard Certification
Pornpiroon Chinson	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	M	Senior Veterinary Officer	Avian Influenza Control Office
Prapas Pinyocheep	SPS Awareness	Short-term training during SPS Study Tour	M	Veterinary Officer	Bureau of Disease Control and Veterinary Service, Department of Livestock Development
Tammawan Hnunthatsong	SPS Awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	F	Veterinary Officer	Department of Livestock Development
Dr Wimolporn Thitisak	Livestock Trade Analysis	Short-term training in SPS Barriers to ASEAN Meat Exports			Department of Livestock Development
Dr Yusathira Bandhukul	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	M	Chief of Prachuabkirikan Quarantine Office	Prachuabkirikan Animal Quarantine Station
Kulapa Polratana	GIS	Short-term training in GIS for Animal Health Management	F	Veterinarian	Department of Livestock Development
Kanda Thongsom	GIS	Short-term training in GIS for Animal Health Management	F	Veterinarian	Department of Livestock Development, Regional Bureau of Animal Health and Sanitary 9th
Kannikar Na Lampang	GIS	Short-term training in GIS for Animal Health Management		Lecturer	Veterinary Public Health, Faculty of Veterinary Medicine, Chiang Mai University

APPENDIX G – CAPACITY BUILDING (ANIMAL) - VIETNAM

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Bui Thi Cuc	Livestock Trade Analysis	Short-term training in SPS Barriers to ASEAN Meat Exports	F	Vice Chief of Planning	Department of Animal Health, Ministry of Agriculture and Rural Development
Dr Dau Ngoc Hao	SPS Awareness	Short-term training during SPS Study Tour	M	Deputy Director General	Department of Animal Health, Ministry of Agriculture and Rural Development
Hoang Dinh Quoc	Livestock Trade Analysis	Short-term training in SPS Barriers to ASEAN Meat Exports	M		Center for Agricultural Policy, Institute of Policy and Strategy for Agriculture and Rural Development, Ministry of Agricultural and Rural Development
Dr Le Thanh Hoa	Livestock Trade Analysis	Short-term training in SPS Barriers to ASEAN Meat Exports	M		SPS Office, Plant Protection Department, Ministry of Agriculture and Rural Development
Nguyen Do Anh Tuan	Livestock Trade Analysis	Short-term training in SPS Barriers to ASEAN Meat Exports	M		Center for Agricultural Policy, Institute of Policy and Strategy for Agriculture and Rural Development, Ministry of Agricultural and Rural Development
Pham Thi Lien Phuong	Livestock Trade Analysis	Short-term training in Livestock Disease & SPS Restrictions	F		Institute of Policy and Strategy for Agricultural and Rural Development, Ministry of Agriculture and Rural Development
Quy Tran Dien	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	M	Head of Epidemiology Section	Regional Animal Health Office No. 6
Tao Anh Tuan	SPS Awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	M	Director	Sub-Department of Animal Health, Khanh Hoa Province
Thuy Nguyen Thi Thanh	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis, Zoning and Consolidation	F	Veterinary Quarantine Inspector	Regional Animal Health Office
Tran Thi Thu Phuong	SPS Awareness	Short-term training in SPS Animal Health Awareness for Middle Managers	F		Department of Animal Health
Tung Nguyen Hoang	Surveillance, Risk Analysis, Zoning	Series of short-term training in Integrated Risk Management for Livestock Diseases covering Surveillance, Risk Analysis and Zoning	M	Veterinary Officer	Department of Animal Health

APPENDIX G – CAPACITY BUILDING (PLANT) - AUSTRALIA

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Jillian Walsh	Diagnostics	Short-term training in ASEAN Regional Diagnostics Network Planning	F	Plant Pathologist	Plant Protection Centre, Department of Agriculture, Salakham
Warren Hoyer	SPS Awareness	Short-term training in SPS Awareness for Plant Health	M	Program Manager	AusAID Vientiane

APPENDIX G – CAPACITY BUILDING (PLANT) - BHUTAN

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Mr Karma Penjore	SPS Awareness, Collection Rehabilitation	Short-term training activity in SPS Awareness and Arthropod Preservation, Curation and Data Management	M	Lecturer	Royal University of Bhutan, Faculty of Agriculture, College of Natural Resources

APPENDIX G – CAPACITY BUILDING (PLANT) - BRUNEI DARUSSALAM

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Abd Habib bin Hj Md Jair	Pest Risk Analysis	Short-term training in Plant Pest Risk Analysis (PRA)	M	Junior Agriculture Assistant	Plant Quarantine Unit, Department of Agriculture, Ministry of Industry and Primary Resources
Ali bin Ahmad	Pest Risk Analysis	Short-term training in PRA	M	Agriculture Assistant	Crop Protection Unit, Department of Agriculture, Ministry of Industry and Primary Resources
Amalie bin Agas	Pest Risk Analysis	Short-term training in PRA	M	Junior Agriculture Assistant	Plant Quarantine Unit, Department of Agriculture, Ministry of Industry and Primary Resources
Ellya Hafidzah bte Hj Mustafa	Pest Risk Analysis	Short-term training in PRA	F	Special Duty Staff	Crop Protection Unit, Department of Agriculture, Ministry of Industry and Primary Resources
Fuziah Haji Hamdan	Pest Risk Analysis Train-the-Trainer, Diagnostics	Short-term training in Plant PRA Train-the-Trainer and Diagnostics of Citrus Greening Disease (HLB)	F	Senior Plant Pathologist	Plant Disease Unit, Department of Agriculture, Ministry of Industry and Primary Resources
Hairunizam bin Haji Panjang	SPS Awareness, Collection Rehabilitation, Diagnostics	Short-term training in SPS Awareness, Plant Disease Specimen Preservation, Curation and Data Management and Diagnostics of Plant Pathogenic Fungi	M	Junior Agriculture Assistant	Plant Pathology Unit, Brunei Agricultural Research Centre (BARC), Department of Agriculture
Hajah Safwanah bte Abdullah	Pest Risk Analysis	Short-term training in PRA	F	Senior Agriculture Assistant	Crop Protection Unit, Department of Agriculture, Ministry of Industry and Primary Resources
Herdy bin Hj Besar	Pest Risk Analysis	Short-term training in PRA	M	Junior Agriculture Assistant	Plant Quarantine Unit, Department of Agriculture, Ministry of Industry and Primary Resources
Hj Mohd Sofian bin Hj Muhd Zaim	Diagnostics, Pest Risk Analysis	Short-term training in Diagnostics of Plant-sucking Bugs (Hemiptera) and Plant PRA	M	Senior Veterinary Assistant	Crop Protection Unit, Department of Agriculture, Ministry of Industry and Primary Resources
Jamalludin bin Hj Yusoff	SPS Awareness	Short-term training during SPS Study Tour	M	Senior Agricultural Advisor	Crop Division, Department of Agriculture, Bandar Seri Begawan
Jomari Hj. Ahmad	SPS Awareness	Short-term training in SPS Awareness	M	Senior Agriculture Officer and Head of Plant Pest Unit	Crop Development Division, Department of Agriculture, Ministry of Industry and Primary Resources
Mohammad Aslin bin Haji Muhammad Junaidy	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness, Arthropod Preservation, Curation and Data Management and SPS Awareness for Plant Health	M	Assistant Agricultural Officer	Plant Quarantine Unit, Department of Agriculture, Ministry of Industry and Primary Resources
Muhd Azim bin Bidin	Pest Risk Analysis	Short-term training in PRA	M	Senior Agriculture Assistant	Plant Quarantine Unit, Department of Agriculture, Ministry of Industry and Primary Resources
Muhd Musleh bin Abdullah Malai	Pest Risk Analysis	Short-term training in PRA	M	Junior Agriculture Assistant	Plant Quarantine Unit, Department of Agriculture, Ministry of Industry and Primary Resources
Muslim bin Hj Lamit	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	M	Agriculture Assistant	Plant Pest Unit, Crop Development Division, Department of Agriculture, Ministry of Industry and Primary Resources
Noor Azri bin Haji Mohamad Noor	Diagnostics	Short-term training in Diagnostics of Seed-borne Rice Diseases and ASEAN Regional Diagnostics Network Planning	M	Assistant Agricultural Officer	Plant Protection Unit, Brunei Agricultural Research Centre (BARC), Kilans, Department of Agriculture, Ministry of Industry and Primary Resources
Noridah Binti Haji Md. Jali	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	F	Junior Laboratory Assistant	Plant Disease Unit, Brunei Agricultural Research Centre, Department of Agriculture
Pengiran Zaini Bin Pengiran Hj. Ahmad	Data Standards	Short-term training in Data Standards and Information Management	M	Agriculture Officer	Department of Agriculture, Ministry of Industry and Primary Resources
Zinni bin Haji Amat	Pest Risk Analysis	Short-term training in PRA	M	Senior Agriculture Assistant	Plant Quarantine Unit, Department of Agriculture, Ministry of Industry and Primary Resources

APPENDIX G – CAPACITY BUILDING (PLANT) - CAMBODIA

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Buntuon Simona	Data Standards, Pest Risk Analysis Train-the-Trainer, Pest Risk Analysis	Short-term training in Data Standards and Information Management, Plant PRA Train-the-Trainer Workshop and Plant PRA	M	Vice Chief	Plant Protection and Phytosanitary Inspection Office, Department of Agronomy and Agricultural Land Improvement, Ministry of Agriculture, Forestry and Fisheries
Chan Nhep	Pest Risk Analysis	Short-term training in Plant Pest Risk Analysis (PRA)	M		Plant Protection and Phytosanitary Inspection Office, Department of Agronomy and Agricultural Land Improvement
Chhin Sovanndech	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	M	Technical Officer	Plant Protection and Phytosanitary Inspection Office, Department of Agronomy and Agricultural Land Improvement
Chhun Hy Heng	SPS Awareness, Pest Risk Analysis	Short-term training in SPS Awareness and Plant PRA	M	Vice Chief	Plant Protection and Phytosanitary Inspection Office, Department of Agronomy and Agricultural Land Improvement, Ministry of Agriculture, Forestry and Fisheries
Dy Sam An	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	M	Vice Chief	Plant Protection and Phytosanitary Inspection Office, Department of Agronomy and Agricultural Land Improvement
Dr Hean Vanhan	SPS Awareness, Diagnostics	Short-term training during SPS Study Tour and ASEAN Regional Diagnostics Network Planning	M	Deputy Director General	Department of Agronomy and Agricultural Land Improvement, Ministry of Agriculture, Forestry and Fisheries
Kang Sareth	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	M	Technical Officer	Plant Protection and Phytosanitary Inspection Office, Department of Agronomy and Agricultural Land Improvement
Keo Sopha	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	M	Technical Officer	Plant Protection Office, Department of Agronomy and Agricultural Land Improvement, Ministry of Agriculture, Forestry and Fisheries
Khuon Eang	SPS Awareness	Short-term training in SPS Awareness	M	Vice Dean	Faculty of Agronomy, Royal University of Agriculture
Leang Aukheng	SPS Awareness	Short-term training in SPS Awareness	M	Lecturer	Plant Protection and Head of Department of Extension and Rural Development of Prek Leap National Agricultural School (PNSA)
Leang Dara	Diagnostics	Short-term training in Diagnostics of Phytophagous Mites (Acarina)	M	Technical Officer	Plant Protection and Phytosanitary Inspection Office, Department of Agronomy and Agricultural Land Improvement
Ly Sereivuth	Data Standards, SPS Awareness	Short-term training in Data Standards and Information Management and SPS Awareness for Plant Health	M	Technical Officer	Plant Protection and Phytosanitary Inspection Office, Department of Agronomy and Agricultural Land Improvement, Ministry of Agriculture, Forestry and Fisheries
Mean Chetna	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	M	Technical Officer	Plant Protection and Phytosanitary Inspection Office, Department of Agronomy and Agricultural Land Improvement
Mey Dararith	SPS Awareness	Short-term training in SPS Awareness for Plant Health	M	International Business Manager	Men Sarun Import Export Co., Ltd
Oum Sophea	Pest Risk Analysis	Short-term training in Plant PRA	M		Plant Protection and Phytosanitary Office, Department of Agronomy and Agricultural Land Improvement
Dr Preap Visarto	Diagnostics	Short-term training in ASEAN Regional Diagnostics Network Planning	M	Acting Deputy Director	Department of Plant Protection, Phytosanitary and Phytosanitary
Sar Chamthy	Pest Risk Analysis	Short-term training in Plant PRA	M		Plant Protection and Phytosanitary Office, Department of Agronomy and Agricultural Land Improvement
So Thavirith	Diagnostics, SPS Awareness, Collection Rehabilitation, Pest Risk Analysis	Short-term training in Diagnostics of Plant-sucking Bugs (Hemiptera), SPS Awareness, Plant Disease Specimen Preservation, Curation and Data Management, Diagnostics of Plant Pathogenic Fungi and Plant PRA	M	Technical Officer	Plant Protection Office, Plant Protection Service, Department of Agronomy and Agricultural Land Improvement, Ministry of Agriculture, Forestry and Fisheries
Socheata Lorn	Pest Risk Analysis	Short-term training in Plant PRA	M		Plant Protection and Phytosanitary Inspection Office, Department of Agronomy and Agricultural Land Improvement

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Suon Serey	Diagnostics	Short-term training in Diagnostics of Key Pest Lepidoptera	M	Deputy Director	Kampong Cham National School of Agriculture
Dr Suon Sothoeun	SPS Awareness	Short-term training during SPS Study Tour	M	Deputy Director	Department of Animal Health and Production, Ministry of Agriculture, Forestry and Fisheries
Uch Sothy	Diagnostics, SPS Awareness	Short-term training in Diagnostics of Citrus Greening Disease (HLB) and SPS Awareness	M	Technical Officer	Plant Protection and Phytosanitary Inspection Office, Department of Agronomy and Agricultural Land Improvement, Ministry of Agriculture, Forestry and Fisheries

APPENDIX G – CAPACITY BUILDING (PLANT) - CHINA

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
GE Jianjun	Pest Risk Analysis	Short-term training in Plant PRA	M	Vice Professor	Institute of Animal & Plant Quarantine, Chinese Academy of Inspection and Quarantine
Dr WU Xingxia	Pest Risk Analysis	Short-term training in Plant Pest Risk Analysis (PRA)	F	Senior Agronomist	China WTO/SPS Notification Authority and Enquiry Point, Administration of Quality Supervision, Inspection and Quarantine

APPENDIX G – CAPACITY BUILDING (PLANT) - INDIA

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Dev Dutt Kumar Sharma	Pest Risk Analysis	Short-term training in Plant Pest Risk Analysis (PRA)	M	Deputy Director (Plant Protection)	Directorate of Plant Protection, Quarantine and Storage, Ministry of Agriculture, Government of India
Jaiinder Pal Singh	Pest Risk Analysis	Short-term training in Plant PRA	M	Plant Protection Officer (Entomology)	Plant Quarantine Division, Directorate of Plant Protection, Quarantine and Storage, Ministry of Agriculture, Government of India

APPENDIX G – CAPACITY BUILDING (PLANT) - INDONESIA

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Abi Said Hudri	Pest Risk Analysis	Short-term training in Plant PRA	M	Plant Quarantine Inspector	Central Office of Center for Plant Quarantine, Agency for Agriculture Quarantine, Ministry of Agriculture
Aprida Cristin Panjaitan	Pest Risk Analysis Train-the-Trainer	Short-term training in Plant PRA Train-the-Trainer	F	Plant Quarantine Official	Agriculture Quarantine Agency, Ministry of Agriculture
Aries Pratomo, SP	Diagnostics	Short-term training in Diagnostics of Citrus Greening Disease (HLB)	M	Technical Officer	Food Crop and Horticulture Protection Centre (BTPPH), Central Java
Aulia Nusantara, SP	Diagnostics	Short-term training in Diagnostics of Phytophagous Mites (Acarina)	M	Technical Staff	Jayapura Plant Quarantine Agency
Ms Cahyaniati (Yani)	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F	Chief	Disease Control Section, Directorate of Horticultural Protection, Department of Agriculture
Derhani Lumban Gaol, Ir.	SPS Awareness	Short-term training in SPS Awareness	F	Technical Officer	Center of Standard Testing of Agricultural Quarantine
Dwi Sugipriatini	SPS Awareness, Collection Rehabilitation, Diagnostics	Short-term training in SPS Awareness, Plant Disease Specimen Preservation, Curation and Data Management and Diagnostics of Plant Pathogenic Fungi	M	Asisstant Scientist	Plant Quarantine Testing/Diagnostic Services, Plant Quarantine Central Laboratory
Eddy Praminto	Data Standards	Short-term training in Data Standards and Information Management	M	Head of Division	Technique and Method for Plant Quarantine, Agency for Agricultural Quarantine, Ministry of Agriculture
Eliza Rusli	SPS Awareness	Short-term training in SPS Awareness	F	Head	Standard Laboratory of Plant Quarantine, Agriculture Quarantine Agency
Endang Syarifudin	Pest Risk Analysis	Short-term training in Plant Pest Risk Analysis (PRA)	M		Agriculture Quarantine Agency
Endang Winarni	Diagnostics	Short-term training in Diagnostics of Key Pest Lepidoptera	F	Plant Quarantine Inspector	Plant Quarantine Service, Jakarta Seaport
Fauzar Rohani	Diagnostics	Short-term training in Diagnostics of Citrus Greening Disease (HLB)	M		Central Laboratory of Indonesian Plant Quarantine, Agency for Agriculture Quarantine
Mr Hermawan	Diagnostics	Short-term training in ASEAN Regional Diagnostics Network Planning	M		Indonesian Agriculture and Quarantine Agency (IAQA)
Ir. Arfany Bastony, MM	SPS Awareness	Short-term training in SPS Awareness for Plant Health	M	Director of	Plant Quarantine Centre, Agency of Agricultural Quarantine
Ir. Rahmawati	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	F	Deputy Manager	Technique on Nematode Laboratory, Center of Standard Testing of Agricultural Quarantine
Ir. Syahriani Kadir	Pest Risk Analysis	Short-term training in Plant PRA		Coordinator Functional Position	Plant Quarantine Service of Makassar
Jati Adiputra, Ssi.	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	M	Technical Officer	Plant Quarantine Testing/Diagnostic Services, Center of Standard Testing of Agricultural Quarantine
Krisna Dwiarniati, S.Si, M.Si	SPS Awareness	Short-term training in SPS Awareness	F	Deputy Manager	Plant Quarantine Testing/Diagnostic Services, Center of Standard Testing of Agricultural Quarantine
Mahmud Siam, SP	Diagnostics	Short-term training in Diagnostics of Phytophagous Mites (Acarina)	M	Head	Plant Quarantine Station, Bengkulu (Stasiun Karantina Tumbuhan Kelas II Pulau Baai Bengkulu)
Mathur Riady	SPS Awareness	Short-term training during SPS Study Tour	M	Director General	Directorate General of Livestock Services, Department of Agriculture
Medirena Railan	Diagnostics	Short-term training in Diagnostics of Citrus Greening Disease (HLB)	F	Technical Officer	Jalan AUP Pasar Minggu
Mochamad Achrom, Ir, Msi	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	M	Senior Technical Officer	Agricultural Quarantine Services, Tanjung Priok Agricultural Quarantine Service
Nurjanah, S.P.	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F	Technical Officer	Plant Quarantine Testing/Diagnostic Services, Center of Standard Testing of Agricultural Quarantine
R. Yudiarto Sarsono, Ssi	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	M		Indonesian Agricultural Quarantine Agency (IAQA)

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Riza Desnurvia	SPS Awareness	Short-term training in SPS Awareness	F	Deputy	Technic Manager of Laboratory, Plant Quarantine Central Laboratory
Rumenda Ginting	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F	Technical Officer	Plant Quarantine Central and Laboratory
Mr Suyono	SPS Awareness	Short-term training in SPS Awareness	M	Head	Plant Quarantine Product for Export and Domestic Sub Division for Plant Quarantine Center, Agricultural Quarantine Agency, Ministry of Agriculture
Tara Plutania	SPS Awareness	Short-term training in SPS Awareness for Plant Health	F	General Manager	Masari Multifruiti
Ms Trisnarningsih	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F	Plant Quarantine Inspection Officer	Indonesian Agricultural Biotechnology and Genetic Resources Research Institute
Turhadi Noerachman	Data Standards	Short-term training in Data Standards and Information Management	M	Head of Technical Assistance	Plant Quarantine Sub-division, Agency for Agricultural Quarantine, Ministry of Agriculture
Wita Khairia	Diagnostics	Short-term training in Diagnostics of Citrus Greening Disease (HLB)	F	Technical Officer	Directorate of Horticulure Protection
Professor Y. Andi Trisyono	Diagnostics	Short-term training in ASEAN Regional Diagnostics Network Planning	M	Professor	Department of Crop Protection, Faculty of Agriculture,
Yani Dawy	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F	Entomologist	Laboratory of Entomology, Agriculture Quarantine Agency
Yayat A. Zaini	Diagnostics	Short-term training in Diagnostics of Plant-sucking Bugs (Hemiptera)	M	Head & Senior Plant Quarantine Officer	Agriculture Quarantine Agency

APPENDIX G – CAPACITY BUILDING (PLANT) - JAPAN

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Akira Nagaoka	SPS Awareness	Short-term training in SPS Awareness for Plant Health	M	JICA Expert for Agricultural Policy	Japan International Cooperation Agency (JICA)
Makoto Hatano	SPS Awareness	Short-term training in SPS Awareness for Plant Health		Assistant Resident Representative	Japan International Cooperation Agency (JICA)

APPENDIX G – CAPACITY BUILDING (PLANT) - LAO PDR

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Keo Oudone Philangam	Data Standards	Short-term training in Data Standards and Information Management	F	Senior Officer	Pest Status Records, National Phytosanitary Database
Dr Ketkeo Phouangphet		Short-term training in SPS Awareness for Plant Health	M	Director	Technical Division, Department of Agriculture
Khamphoui Louanglath	SPS Awareness	Short-term training in SPS Awareness and SPS Awareness for Plant Health	F	Deputy Director	Agricultural Regulatory Division, Department of Agriculture
Khamtanh Thadavong	SPS Awareness, Diagnostics	Short-term training in SPS Awareness and ASEAN Regional Diagnostics Network Planning	M	Director	Planning Division, Department of Agriculture, Salakham
Khankeo Moonvong	SPS Awareness	Short-term training in SPS Awareness for Plant Health	F		Operations Section, European Commission (EC) Delegation in the Lao PDR
Dr Lasay Nouanethasing	SPS Awareness	Short-term training in SPS Awareness for Plant Health	M	Director	Agriculture Division
Mircea Dauthy	SPS Awareness	Short-term training in SPS Awareness for Plant Health	M	Project Team Leader	EC-Lao PDR Project on Standards, Quality and Conformity Assessment
Miss Khonsavanh	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	F	Technician	Plant Protection Center, Department of Agriculture
Phanthakone	SPS Awareness	Short-term training in SPS Awareness			AusAID Vientiane
Phaydy Phixaysarakham	SPS Awareness, Diagnostics	Short-term training in SPS Awareness for Plant Health and ASEAN Regional Diagnostics Network Planning	M	Director	Agricultural Regulatory Division, Department of Agriculture
Pheophanh Soysouvanh	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F	Technical Officer	Plant Protection Center, Department of Agriculture, Ministry of Agriculture and Forestry
Phetsamone Songvilay	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	F	Technical staff	
Phoukaothong Sykaisone	Pest Risk Analysis, SPS Awareness, Collection Rehabilitation	Short-term training in Plant PRA, SPS Awareness and Arthropod Preservation, Curation and Data Management	M	Technical Officer	Plant Protection Center, Department of Agriculture
Rakouna Sisaleumsak	SPS Awareness	Workshop on SPS Awareness for Plant Health			AusAID Vientiane
Salongxay Rasabouth	SPS Awareness	Short-term training in SPS Awareness for Plant Health	M		Technical Division, Department of Agriculture
Dr Saliou Savengseuksa	SPS Awareness	Short-term training in SPS Awareness for Plant Health	M	Manager Lao Farmer Product/ Advisor	FONDS CO-OPERATIF S.A.
Sisavang Vonghachack	SPS Awareness	Short-term training in SPS Awareness	M	Deputy Director General	Department of Agriculture, Ministry of Agriculture and Forestry
Somboun Keophilavong	Diagnostics, SPS Awareness, Collection Rehabilitation	Short-term training in Diagnostics of Plant-sucking Bugs (Hemiptera), SPS Awareness and Arthropod Preservation, Curation and Data Management	M	Head	Entomology Section, Plant Protection Centre, Department of Agriculture, Ministry of Agriculture and Forestry
Somdy Boundouangchanh	SPS Awareness	Short-term training in SPS Awareness	F	Assistant Director	Plant Quarantine Division, Department of Agriculture
Somdy Khotsimoung	SPS Awareness	Short-term training in SPS Awareness for Plant Health	F		Agricultural Regulatory Division, Department of Agriculture
Somkhit Sengsay	Pest Risk Analysis	Short-term training in Plant PRA	M	Technician Agronomist	Plant Protection Centre, Department of Agriculture, Ministry of Agriculture and Forestry
Souksavath Vongsykeo	SPS Awareness, Collection Rehabilitation, Diagnostics	Short-term training in SPS Awareness, Plant Disease Specimen Preservation, Curation and Data Management and Diagnostics of Plant Pathogenic Fungi	M	Plant Quarantine Inspector	Agriculture Section
Souliya Souvandouane	Pest Risk Analysis	Short-term training in Plant PRA	M	Technical Officer	Agronomy Management Division, Department of Agriculture, Ministry of Agriculture and Forestry
Souphaphone Rattanasay	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	M	Lecturer	Plant Protection Unit, Faculty of Agriculture, National University of Laos

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Syriphonh Phithaksoum	Pest Risk Analysis	Short-term training in Plant Pest PRA	M	Scientist/ Assistant	Agricultural Regulatory Division, Department of Agriculture
Thatsanaly Saphangthong	Data Standards, SPS Awareness	Short-term training in Data Standards and Information Management and SPS Awareness for Plant Health	F	Officer for Pest Status Records and Quality Assurance for Fruits and Vegetables	Agricultural Regulatory Division, Department of Agriculture
Tiangkham Vongsabouth	Pest Risk Analysis Train-the-Trainer, Pest Risk Analysis	Short-term training in Plant PRA Train-the-Trainer and Plant PRA	M	Head of Technical Unit	Plant Protection Center, Department of Agriculture, Ministry of Agriculture and Forestry
Viengkham Chanthavong	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F	Lecturer on Plant Pathology	Faculty of Agriculture (Nabong Campus), National University of Laos
Viengphet Vansilalom	SPS Awareness, Collection Rehabilitation, Diagnostics	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management and Diagnostics of Key Pest Lepidoptera	F	Assistant	Agricultural Regulatory Division, Department of Agriculture, Ministry of Agriculture and Forestry
Vilaysouk Khennavong	SPS Awareness	Short-term training during SPS Study Tour and SPS Awareness for Plant Health	M	Director	Plant Protection Centre, Department of Agriculture
Vilosa Thalibouth	Diagnostics, Pest Risk Analysis	Short-term training in Diagnostics of Citrus Greening Disease (HLB) and Plant PRA	M	Technician	Plant Protection Center, Agricultural Input Testing Lab, Department of Agriculture, Ministry of Agriculture and Forestry
Viravongsa Sichanh	SPS Awareness	Short-term training in SPS Awareness for Plant Health	M	Senior Expert	EC Lao PDR Project on Standards, Quality and Conformity Assessment

APPENDIX G – CAPACITY BUILDING (PLANT) - MALAYSIA

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Abdullah Ab Deraman	Diagnostics	Short-term training in Diagnostics of Citrus Greening Disease (HLB)	M		Crop Protection and Plant Quarantine Division, Department of Agriculture
Azidah Abdul Aziz	Diagnostics	Short-term training in Diagnostics of Plant-sucking Bugs (Hemiptera)	F		Institute of Biological Sciences Faculty of Science, Universiti Malaysia
Chan Yeng Wai	Data Standards, SPS Awareness, Diagnostics	Short-term training in Data Standards and Information Management, SPS Awareness and Diagnostics of Key Pest Lepidoptera	M	Principal Assistant Director	Pest Collection & Repository Section, Crop Protection and Plant Quarantine Division, Department of Agriculture
Chua Lee Seng	SPS Awareness	Short-term training in SPS Awareness for Plant Health	M	Assistant Director	Department of Agriculture, Cameron Highlands
Dato' Sofian Mohd Salleh	SPS Awareness	Short-term training during SPS Study Tour	M	Deputy Director General	Crop Protection and Plant Quarantine Division, Department of Agriculture
Edohon Layun	SPS Awareness	Short-term training in SPS Awareness	M		Department of Agriculture, Sabah
Fazila Tamat	Diagnostics	Short-term training in Diagnostics of Key Pest Lepidoptera	F	Laboratory Technician	Pest Collection & Repository Section, Crop Protection and Plant Quarantine Division, Department of Agriculture
Kiftiah Binti Utoh	Pest Risk Analysis	Short-term training in Plant PRA	F	Agriculture ASS Officer	Crop Protection and Plant Quarantine Division, Department of Agriculture
Lailatul Jumaiyah Saleh	Diagnostics	Short-term training in Diagnostics of Seed-borne Rice Diseases	F	Agriculture Officer	Pathology Unit, Seksyen Kepakaran dan Diagnostik
Dr Lily Eng	Pest Risk Analysis	Short-term training in Plant PRA	F	Senior Research Officer (Plant Pathologist)	Agricultural Research Centre, Semongok
Dr Mohamad Roff bin Mohd. Noor	SPS Awareness	Short-term training in SPS Awareness for Plant Health	M	Research Officer	Horticulture Research Centre, Malaysian Agricultural Research and Development Institute (MARDI)
Mohd Sanusi Bin Mohd Kasim	Diagnostics	Short-term training in Diagnostics of Phytophagous Mites (Acarina)	M	Technical Officer	Department of Agriculture
Mohd. Hanifah bin Yahaya	Diagnostics	Short-term training in Diagnostics of Plant-sucking Bugs (Hemiptera)	M		Malaysian Agricultural Research and Development Institute (MARDI)
Mohd. Nazri B. Mohd. Joha	SPS Awareness, Collection Rehabilitation	SPS Awareness and/or Plant Disease Specimen Preservation, Curation and Data Management	M	Assistant Agriculture Officer	Crop Protection and Plant Quarantine Division, Department of Agriculture
Muhaida Bt Mohammad	Diagnostics	Short-term training in Diagnostics of Phytophagous Mites (Acarina)	F	Technical Officer	Post Entry Quarantine, Serdang
Ngizailah Zakaria	Data Standards	Short-term training in Data Standards and Information Management	F		Post Entry Quarantine Station, Crop Protection and Plant Quarantine Division, Department of Agriculture
Nordin Bin Mamat	SPS Awareness	Short-term training in SPS Awareness	M	Senior Agriculture Officer	Crop Protection and Plant Quarantine Division, Department of Agriculture
Norfaine Sameun	Pest Risk Analysis	Short-term training in Plant PRA	F	Assistant Director	Post Entry Quarantine, Crop Protection and Plant Quarantine Division, Department of Agriculture
Rosliza Japuli	Diagnostics	Short-term training in Diagnostics of Plant-sucking Bugs (Hemiptera)	F	Researcher Officer	Strategic Resource Research Centre, Malaysian Agricultural Research and Development Institute (MARDI)
Rozziah bte Bujang Masli	Pest Risk Analysis Train-	Short-term training in Plant PRA Train-the-Trainer	F	Agriculture Officer	Crop Protection and Plant Quarantine Division, Department of Agriculture
Sabariah Ismail	Data Standards	Short-term training in Data Standards and Information Management	F		Crop Protection and Plant Quarantine Division, Department of Agriculture
Sabariah Khamis	Diagnostics, SPS Awareness, Collection Rehabilitation	Short-term training in Diagnostics of Citrus Greening Disease (HLB), SPS Awareness, Plant Disease Specimen Preservation, Curation and Data Management and Diagnostics of Plant Pathogenic Fungi	F	Plant Pathologist	Crop Protection and Plant Quarantine Division, Department of Agriculture
Shabariah binti Ismail	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F	Assistant Agriculture Officer	Crop Protection and Plant Quarantine Division, Department of Agriculture
Siti Nur Hanani Bt Zainol	Diagnostics	Short-term training in Diagnostics of Phytophagous Mites (Acarina)	F	Agriculture Officer	Department of Agriculture

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Siti Zalbiah Mostajab	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F		Crop Protection and Plant Quarantine Division, Department of Agriculture
Sophia Yap	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F		Department of Agriculture, Sabah
Sumarni binti Matnur	Diagnostics	Short-term training in Diagnostics of Plant-sucking Bugs (Hemiptera)	F		Entomology Section, Crop Protection & Plant Quarantine Division, Department of Agriculture
Wan Normah Wan Ismail	Diagnostics	Short-term training in ASEAN Regional Diagnostics Network Planning	F	Director	Crop Protection and Plant Quarantine Division, Department of Agriculture
Wong Wan Cheng	Pest Risk Analysis	Short-term training in Plant PRA	F	Senior Agriculture Officer	Biotechnology Unit, Crop Protection and Plant Quarantine Division, Department of Agriculture
Yap Mui Sui	Diagnostics	Short-term training in Diagnostics of Plant-sucking Bugs (Hemiptera)	F	Agriculture Assistant	Plant Protection Quarantine Section, Department of Agriculture Sabah
Yip Kin San	Pest Risk Analysis	Short-term training in Plant Pest Risk Analysis (PRA)	M		
Yusof Othman	Diagnostics	Short-term training in ASEAN Regional Diagnostics Network Planning	M	Assistant Director	Crop Protection and Plant Quarantine Division, Department of Agriculture

APPENDIX G – CAPACITY BUILDING (PLANT) - MYANMAR

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Aung Thein Oo	Pest Risk Analysis	Short-term training in Plant Pest Risk Analysis (PRA)	M	Deputy Supervisor	Myanmar Agriculture Service, Plant Protection Division
Aye Tun	Diagnostics	Short-term training in ASEAN Regional Diagnostics Network Planning	M	Head of Division	Plant Protection Division, Ministry of Agriculture and Irrigation
Ei Ei Zin	Data Standards	Short-term training in Data Standards and Information Management	F		Plant Protection Division, Myanmar Agricultural Service, Ministry of Agriculture and Irrigation
Hlaing Min	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	M		Ministry of Agriculture and Irrigation
Hnin Hnin Khaing	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	F	Assistant Supervisor	Integrated Pest Management Section, Plant Protection Division, Myanmar Agriculture Service, Ministry of Agriculture and Irrigation
Khin Mar Oo	Pest Risk Analysis	Short-term training in Plant PRA	F	Deputy Supervisor	Plant Protection Division, Myanmar Agriculture Service, Ministry of Agriculture and Irrigation
Khin Mi Mi	Diagnostics	Short-term training in Diagnostics of Phytophagous Mites (Acarina)	F	Assistant Lecturer	Yezin Agricultural University
Kyaw Kyaw Oo	Pest Risk Analysis	Short-term training in Plant PRA	M	Deputy Supervisor	Plant Protection Division, Myanmar Agriculture Service, Ministry of Agriculture and Irrigation
Maw Maw San	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	F		Ministry of Agriculture and Irrigation
May May Khin	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	F		Ministry of Agriculture and Irrigation
Dr Mu Mu Kyaw	Diagnostics	Short-term training in Diagnostics of Phytophagous Mites (Acarina)	F	Assistant Research Officer	Department of Agricultural Research, Ministry of Agriculture and Irrigation
Mu Mu Soe	SPS Awareness	Short-term training in SPS Awareness for Plant Health	F	Supervisor	Plant Protection Division, Myanmar Agriculture Service, Ministry of Agriculture and Irrigation
Mu Mu Thein	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness, Plant Disease Specimen and Arthropod Preservation, Curation and Data Management	F	Deputy Supervisor	Plant Protection Division, Myanmar Agriculture Service, Ministry of Agriculture and Irrigation
Myint Myint Win	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F	Assistant Manager, Team Leader of	Plant Protection Division Bago, Myanmar Agricultural Service, Ministry of Agriculture and Irrigation
Myint Nu Thwin	SPS Awareness, Collection Rehabilitation, Pest Risk Analysis Train-the-Trainer	Short-term training in SPS Awareness, Plant Disease Specimen Preservation, Curation and Data Management and Plant PRA Train-the-Trainer	F	Assistant Manager, Plant Protection Division	Plant Protection Division, Myanmar Agriculture Service, Ministry of Agriculture and Irrigation
Myo Myint	SPS Awareness	Short-term training during SPS Study Tour and SPS Awareness	M	Head of Division	Plant Protection Division, Myanmar Agriculture Service, Ministry of Agriculture and Irrigation
Myo Nyunt	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	M		
Naw Thin Thin Aye	Diagnostics	Workshop on Diagnostics of Seed-borne Rice Diseases	F	Deputy Supervisor/ Pathologist	Plant Protection Division, Myanmar Agriculture Service, Ministry of Agriculture and Irrigation
Ni Ni Htain	SPS Awareness, Collection Rehabilitation, Diagnostics	Short-term training in SPS Awareness, Plant Disease Specimen Preservation, Curation and Data Management and Diagnostics of Plant Pathogenic Fungi	F	Assistant Manager	Plant Protection Division, Myanmar Agriculture Service, Ministry of Agriculture and Irrigation
Phyu Phyu Lwin	SPS Awareness	Short-term training in SPS Awareness	F	Senior Manager/ Entomologist	Plant Protection Division, Myanmar Agriculture Service, Ministry of Agriculture and Irrigation
Dr Pyone Pyone Kyi	Diagnostics, SPS Awareness, Collection Rehabilitation	Short-term training in Diagnostics of Citrus Greening Disease (HLB), SPS Awareness, Plant Disease Specimen Preservation, Curation and Data Management and Diagnostics of Plant Pathogenic Fungi	F	Assistant Manager	Plant Pathology Section, Plant Protection Division, Myanmar Agriculture Service, Ministry of Agriculture and Irrigation

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
San San Lwin	Diagnostics	Short-term training in Diagnostics of Plant-sucking Bugs (Hemiptera) and Key Pest Lepidoptera	F	Assistant Manager	Plant Protection Division, Myanmar Agriculture Service, Plant Protection Division, Ministry of Agriculture and Irrigation
San San Nwet	Pest Risk Analysis	Short-term training in Plant PRA	F	Deputy Supervisor	Entomology Section, Plant Protection Division, Myanmar Agriculture Service, Ministry of Agriculture and Irrigation
Than Ko Ko	Data Standards	Short-term training in Data Standards and Information Management	M		Plant Protection Division, Myanmar Agricultural Service, Ministry of Agriculture and Irrigation
Than Aye	Diagnostics	Short-term training in ASEAN Regional Diagnostics Network Planning	M		Planning Division, Myanmar Agriculture Service, Ministry of Agriculture and Irrigation
Than Than Nwe	SPS Awareness	Short-term training in SPS Awareness for Plant Health	F	Senior Manager	Plant Protection Division, Myanmar Agricultural Service, Ministry of Agriculture and Irrigation
Dr Tin Aye Aye Naing	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	F		Yezin Agricultural University
Win Myint Thein	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	M	Assistant Supervisor	Plant Quarantine Division, Myanmar Agricultural Service, Ministry of Agriculture and Irrigation
Ye Myint	SPS Awareness	Short-term training in SPS Awareness	M	Manager	Seed Pathology Section, Plant Protection Division, Myanmar Agriculture Service, Ministry of Agriculture and Irrigation
Zin Thu Zar Maung	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	F		Ministry of Agriculture and Irrigation

APPENDIX G – CAPACITY BUILDING (PLANT) - PHILIPPINES

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Dr Alvaro L. Lacasandile	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	M	Agricultural Center Chief III/ Officer-in-Charge	Plant Quarantine Service, Department of Agriculture
Benjamin M. Roy	SPS Awareness	Short-term training in SPS Awareness for Plant Health	M	Executive Director	Mindanao Fruit Industry Development Council
Dr Bonifacio F. Cayabyab	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F	University Researcher IV	Crop Protection Cluster, College of Agriculture, University of the Philippines, Los Baños College, Laguna
Cherry Endino	Diagnostics	Short-term training in Diagnostics of Seed-borne Rice Diseases	F	Science Research Analyst	Philippine Rice Research Institute
Clarito M. Barron	SPS Awareness	Short-term training in SPS Awareness	M	Assistant Director	Bureau of Plant Industry, Department of Agriculture
Erlinda L. Leones	SPS Awareness	Short-term training in SPS Awareness	F	Senior Agriculturist	Bureau of Plant Industry, Plant Quarantine Service
Fe De La Cueva	SPS Awareness, Collection Rehabilitation, Diagnostics	Short-term training in SPS Awareness, Plant Disease Specimen Preservation, Curation and Data Management and Diagnostics of Plant Pathogenic Fungi	F	University Researcher and concurrent Affiliate Associate Professor	Institute of Plant Breeding (IPB), University of the Philippines, Los Baños and Chemical Engineering Department
Ferlavec F. Apacionado	Diagnostics, Pest Risk Analysis	Short-term training in Diagnostics of Plant-sucking Bugs (Hemiptera) and Plant Pest Risk Analysis (PRA)	F	Agriculturalist level I	Post Entry Quarantine Station, Plant Quarantine Service, Bureau of Plant Industry
Geronima P. Eusebio	Pest Risk Analysis	Short-term training in Plant PRA	F	Agriculturalist II	Post Entry Quarantine Station, Plant Quarantine Service, Bureau of Plant Industry
Dr Golez Hernani Grande	SPS Awareness	Short-term training in SPS Awareness	M	Agricultural Center Chief III	Bureau of Plant Industry
Hernani G. Golez	Pest Risk Analysis	Short-term training in Plant PRA	M	Agriculture Centre Chief	Bureau of Plant Industry
Jane Bartolini	Diagnostics	Short-term training in Diagnostics of Seed-borne Rice Diseases	F	Senior Agriculturist	Head Seed Health Unit and Seed Technology Transfer and Research, Bureau of Plant Industry, National Seed Quality Control Services
Joan-May Tolentino	Diagnostics, Pest Risk Analysis	Short-term training in Diagnostics of Citrus Greening Disease (HLB) and Plant PRA	F	Plant Quarantine Officer	Plant Quarantine Service, Bureau of Plant Industry
Joselito L. Antioquia	SPS Awareness	Short-term training in SPS Awareness for Plant Health	F	Senior Agriculturist	Plant Quarantine Service, Bureau of Plant Industry
Larry Lacson	SPS Awareness	Short-term training in SPS Awareness	M	Agricultural Center Chief II	Plant Quarantine Service, Hall#2 One-Stop Export Documentation Center, Bureau of Plant Industry
Lea Ramos	SPS Awareness	Short-term training during SPS Study Tour	F	Officer-in-Charge	Office of the Director, Bureau of Plant Industry
Leslie Aductante Manalo	Pest Risk Analysis	Short-term training in Plant PRA	M	Agriculturalist II	Plant Quarantine Service, South Port of Manila
Lorelie Agbagala	Pest Risk Analysis Train-the-Trainer, Pest Risk Analysis	Short-term training in Plant PRA Train-the-Trainer Workshop and Plant PRA	F	Agricultural Center Chief II	Post-Entry Quarantine Station, Los Baños, Laguna
Loreta Dulce	Data Standards	Short-term training in Data Standards and Information Management	F	Senior Agriculturalist	Bureau of Plant Industry
Luben Q. Marasigan	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	M	Supervising Agriculturist	Ninoy Aquino International Airport
Margueritte Gay M. Bihasa	Pest Risk Analysis	Short-term training in Plant PRA	F	Agriculturist	Plant Quarantine Service, Bureau of Plant Industry
Maria Luz J. Sison	Diagnostics	Short-term training in Diagnostics of Key Pest Lepidoptera	F	Researcher (Entomology, Genetics as cognate)	University of the Philippines, Los Baños
Pacita V. Barron	SPS Awareness	Short-term training in SPS Awareness	F	Senior Agriculturist	Bureau of Plant Industry

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Prececpina B. Luzaran	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	F	Senior Agriculturist	Crop Protection Division, Bureau of Plant Industry, Department of Agriculture
Roberto C. Amores	SPS Awareness	Short-term training in SPS Awareness for Plant Health	M	President and CEO	HI-LAS Marketing Corporation
Salvador S. Salacup	SPS Awareness	Short-term training during SPS Study Tour	M	Assistant Secretary	Department of Agriculture
Sophia Pallasigui Taburnal	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F	Senior Agriculturalist	Bureau of Plant Industry, BPI Complex
Teresita U Dalisay	Diagnostics	Short-term training in ASEAN Regional Diagnostics Network Planning	F	Plant Pathologist	Crop Protection Cluster, College of Agriculture, University of the Philippines, Los Baños College, Laguna
Dr Wilma R. Cuaterno	Diagnostics, SPS Awareness, Collection Rehabilitation	Short-term training in Data Standards and Information Management, SPS Awareness, Arthropod Preservation, Curation and Data Management and ASEAN Regional Diagnostics Network Planning	F	Head	Crop Protection Division, Bureau of Plant Industry, Department of Agriculture

APPENDIX G – CAPACITY BUILDING (PLANT) - SINGAPORE

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Gloria Ong Li-An	Pest Risk Analysis	Short-term training in Plant PRA	F	Scientist (Plant Pest Management)	Animal & Plant Health Centre, Agri-Food and Veterinary Authority of Singapore
He Lian Sheng	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	M	Senior Scientist (Entomologist)	Plant Health Centre, Agri-Food and Veterinary Authority of Singapore, Ministry of National Development
He Liansheng	Diagnostics	Short-term training in Diagnostics of Key Pest Lepidoptera	M	Senior Scientist	Agri-Food and Veterinary Authority of Singapore
Dr Jia Yih Wong	SPS Awareness, Collection Rehabilitation, Diagnostics, Pest Risk Analysis	Short-term training in SPS Awareness, Plant Disease Specimen Preservation, Curation and Data Management, Diagnostics of Plant Pathogenic Fungi and Plant PRA	M	Senior Scientist	Agri-Food and Veterinary Authority of Singapore
Jolly Lim Hood Poh	Pest Risk Analysis	Short-term training in Plant Pest Risk Analysis (PRA)	M	Scientist	Pest Management Unit, Agri-Food and Veterinary Authority of Singapore
Koh Li Huan	Diagnostics	Short-term training in Diagnostics of Citrus Greening Disease (HLB)	F	Senior Scientist	Animal & Plant Health Centre, Division of Animal & Plant Health Laboratories, Agri-Food and Veterinary Authority of Singapore
Lyn Lee Han Lin	Pest Risk Analysis	Short-term training in Plant PRA	F	Plant Health Officer	Plant Regulatory Branch, Plant Health Centre, Agri-Food and Veterinary Authority of Singapore
Dr Mohd Ismail Mohd Ali	Data Standards, Pest Risk Analysis Train-the-Trainer	Short-term training in Data Standards and Information Management and Plant PRA Train-the-Trainer	M	Assistant Principal Plant Health Officer	Plant Regulatory Branch, Agri-Food and Veterinary Authority of Singapore
Oh Lee Huat	Pest Risk Analysis	Short-term training in Plant PRA	M	Senior Lab Technician	Agri-Food and Veterinary Authority of Singapore
Teo Yen Ling	Pest Risk Analysis	Short-term training in Plant PRA	F	Senior Import & Export Officer	Agri-Food and Veterinary Authority of Singapore
Wong Juat Lin	Diagnostics	Workshop on Diagnostics of Seed-borne Rice Diseases	F	Principal Laboratory Technologist	Agri-Food and Veterinary Authority of Singapore
Dr Yap Mei Lai (Jenny)	SPS Awareness, Collection Rehabilitation, Diagnostics	Short-term training in SPS Awareness, Plant Disease Specimen Preservation, Curation and Data Management and ASEAN Regional Diagnostics Network Planning	F	Deputy Head	Plant Pathology, Animal & Plant Health Laboratories Division, Agri-Food and Veterinary Authority of Singapore
Yvonne Low May Ling	Pest Risk Analysis	Short-term training in Plant PRA	F	Import & Export Officer	Agri-Food and Veterinary Authority of Singapore
Zuria Binte Mohama Din	SPS Awareness, Collection Rehabilitation, Diagnostics	Short-term training in SPS Awareness, Arthropod Preservation, Curation and Data Management and Diagnostics of Phytophagous Mites (Acarina)	F	Senior Technical Officer/ Senior Laboratory Technologist	Animal & Plant Health Laboratories Division, Agri-Food and Veterinary Authority of Singapore
Zuria Mohama Din	Diagnostics	Short-term training in Diagnostics of Plant-sucking Bugs (Hemiptera)	F		Animal & Plant Health Centre, Agri-Food & Veterinary Authority of Singapore, Ministry of National Development

APPENDIX G – CAPACITY BUILDING (PLANT) - TAIWAN

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Lu, Huei-Chen	Pest Risk Analysis	Short-term training in Plant Pest Risk Analysis (PRA)	F	Section Chief	
Wang, Hui-Wen	Pest Risk Analysis	Short-term training in Plant PRA	F	Specialist	

APPENDIX G – CAPACITY BUILDING (PLANT) - THAILAND

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Adulrat Klaewklad	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	M	Agricultural Scientist	Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture
Alongkot Phodee	Pest Risk Analysis	Short-term training in Plant Pest Risk Analysis (PRA)	M	Agricultural Research Scientist	Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture
Ancharee Swadtam	Diagnostics	Short-term training in Diagnostics of Key Pest Lepidoptera	F	Assistant Professor	Rajamangala University of Technology
Burane Puawongphat	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	F		Plant Pathology Research Group, Plant Protection Research and Development Office, Department of Agriculture
Chainarat Sonsiri	SPS Awareness	Short-term training in SPS Awareness for Plant Health	M	Agricultural Scientist	Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture
Chanasirin Klinmanee	Diagnostics	Short-term training in Diagnostics of Seed-borne Rice Diseases	F	Agricultural Scientist/ Senior Researcher	Phatthalung Rice Research Center
Chanintorn Douangsa-ard	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	F	Plant Pathologist	Plant Pathology Research Group, Plant Protection Research and Development Office, Department of Agriculture
Chonticha Rakkrai	SPS Awareness	Short-term training in SPS Awareness	F	Agricultural Scientist (Plant Pathologist)	Plant Protection Research and Development Office, Department of Agriculture
Darunee Punyapitak	Diagnostics	Short-term training in Diagnostics of Citrus Greening Disease (HLB)	F	Plant Pathologist, Level 4	Virology Section, Plant Pathology Research Group, Plant Protection Research and Development Office, Department of Agriculture
Dr Darunee Wongsasithorn	SPS Awareness	Short-term training during SPS Study Tour	F	Senior Expert in Plant Quarantine	Department of Agriculture
Duangsamorn Sutphisut	Diagnostics	Short-term training in Diagnostics of Key Pest Lepidoptera		Entomologist	Insect Taxonomy Group, Department of Agriculture
Jaruwan Chantira	SPS Awareness	Short-term training in SPS Awareness	F	Agricultural Scientist	Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture
Nathawat Yamyim	Diagnostics, SPS Awareness, Collection Rehabilitation	Short-term training in Diagnostics of Plant-sucking Bugs (Hemiptera), SPS Awareness and Arthropod Preservation, Curation and Data Management	M	Assistant Researcher	Insect Taxonomy Group, Entomology and Zoology Research Division, Plant Protection Research and Development Office, Department of Agriculture
Natthaporn Uthaimongkol	Data Standards, Pest Risk Analysis Train-the-Trainer, Pest Risk Analysis, SPS Awareness	Short-term training in Data Standards and Information Management, Plant PRA Train-the-Trainer, Plant PRA and SPS Awareness	F	Senior Agricultural Research Scientist	Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture
Nuttawat Yamyin	Diagnostics	Short-term training in Diagnostics of Key Pest Lepidoptera	M	Technical	Department of Agriculture
Parichate Tangkanchanapas	Pest Risk Analysis	Short-term training in Plant PRA	F	Junior Agricultural Scientist	Plant Quarantine Pest Section
Peerawan Patanavipart	Diagnostics	Short-term training in Diagnostics of Plant Pathogenic Fungi	F	Plant Pathologist	Plant Pathology Research Group, Institute of Research and Development of Plant Protection, Department of Agriculture
Pichate Chaowattanawong	Diagnostics	Short-term training in Diagnostics of Phytophagous Mites (Acarina)	M	Entomologist	Department of Agriculture

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Ploychompoo Konvipasruang	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F	Entomologist	Entomology and Zoology Group, Plant Protection Research and Development Office, Ministry of Agriculture and Cooperatives
Preyapan Pongsapich	SPS Awareness	Short-term training in SPS Awareness	F	Agricultural Scientist	Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture
Ratana Nachapong	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F	Senior Entomologist	Entomology and Zoological Research Group, Plant Protection Research and Development Office, Department of Agriculture
Saluckjit Phankum	SPS Awareness	Short-term training in SPS Awareness	F		Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture
Sawai Buranapanichpan	Diagnostics	Short-term training in Diagnostics of Key Pest Lepidoptera	M	Associate Professor	Chiang Mai University, Department of Entomology, Faculty of Agriculture
Dr Somsiri Sangchote	Diagnostics	Short-term training in Diagnostics of Seed-borne Rice Diseases	M	Associate Professor	Department of Plant Pathology, Kasetsart University
Sukhontip Sombat	Collection Rehabilitation, Pest Risk Analysis, Diagnostics	Short-term training in Plant Disease Specimen Preservation, Curation and Data Management, Plant PRA and Diagnostics of Seed-borne Rice Diseases	F	Agricultural Research Scientist	Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture
Supaluck Klubnuam	SPS Awareness	Short-term training in SPS Awareness	F	Supervisor	Department of Agricultural Extension
Supatra Inthavimolsri	Collection Rehabilitation	Short-term training in Plant Disease Specimen Preservation, Curation and Data Management	F	Plant Pathologist	Plant Pathology Research Group, Institute of Research and Development of Plant Protection, Department of Agriculture
Tadsanai Jeenthong	Diagnostics	Short-term training in Diagnostics of Key Pest Lepidoptera	M	Technician	National Science Museum
Tassanaporn Tassakorn	Collection Rehabilitation	Short-term training in Plant Disease Specimen Preservation, Curation and Data Management	F	Plant Pathologist	Plant Pathology Research Group, Institute of Research and Development of Plant Protection, Department of Agriculture
Tharntip Bhasabutra	Diagnostics	Short-term training in Diagnostics of Plant Pathogenic Fungi	F	Plant Pathology	Plant Pathology Research Group, Institute of Research and Development of Plant Protection, Department of Agriculture
Uthai Kwanjai	SPS Awareness	Short-term training in SPS Awareness for Plant Health	M	VHT Factory Manager	Taniyama Siam Co. Ltd
Dr Walaikorn Rattanadechakul	Diagnostics	Short-term training in ASEAN Regional Diagnostics Network Planning	F	Senior Agricultural Research Specialist	Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture
Wanich Khampanich	Diagnostics	Short-term training in Diagnostics of Plant Pathogenic Fungi	M	Agricultural Scientist	Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture
Wanpen Srichart	Diagnostics	Short-term training in Diagnostics of Plant Pathogenic Fungi	F	Agricultural Scientist	Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture
Dr Wanphen Srithongchai	SPS Awareness	Short-term training in SPS Awareness	F	Plant Pathologist 7	Plant Virology Section, Plant Pathology Research Group, Plant Protection Research and Development Office, Department of Agriculture
Waranya Malee	SPS Awareness, Diagnostics, Pest Risk Analysis	Short-term training in SPS Awareness, Diagnostics of Plant Pathogenic Fungi and Plant PRA	F	Agricultural Scientist	Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Wimol Seetou	Collection Rehabilitation	Short-term training in Plant Disease Specimen Preservation, Curation and Data Management	F	Agricultural Scientist	Plant Quarantine Research Group, Plant Protection Research and Development Office, Department of Agriculture
Wipada Plodkornburee	Data Standards	Short-term training in Data Standards and Information Management	F	Senior Agricultural Research Scientist	
Dr Wong Bonsuebsakul	SPS Awareness	Short-term training in SPS Awareness	F	Head	Bacteriology grouping (Disease gr.), Plant Pathology Research Group, Institute of Research and Development of Plant Protection, Department of Agriculture
Dr Yupa Hanboonsong	Diagnostics	Short-term training in ASEAN Regional Diagnostics Network Planning	F	Director & Associate Professor in Entomology	Office of Agriculture International, Faculty of Agriculture, Khon Kaen University
Yuvarin Boontop	Diagnostics	Short-term training in Diagnostics of Key Pest Lepidoptera	F	Entomologist	Department of Agriculture

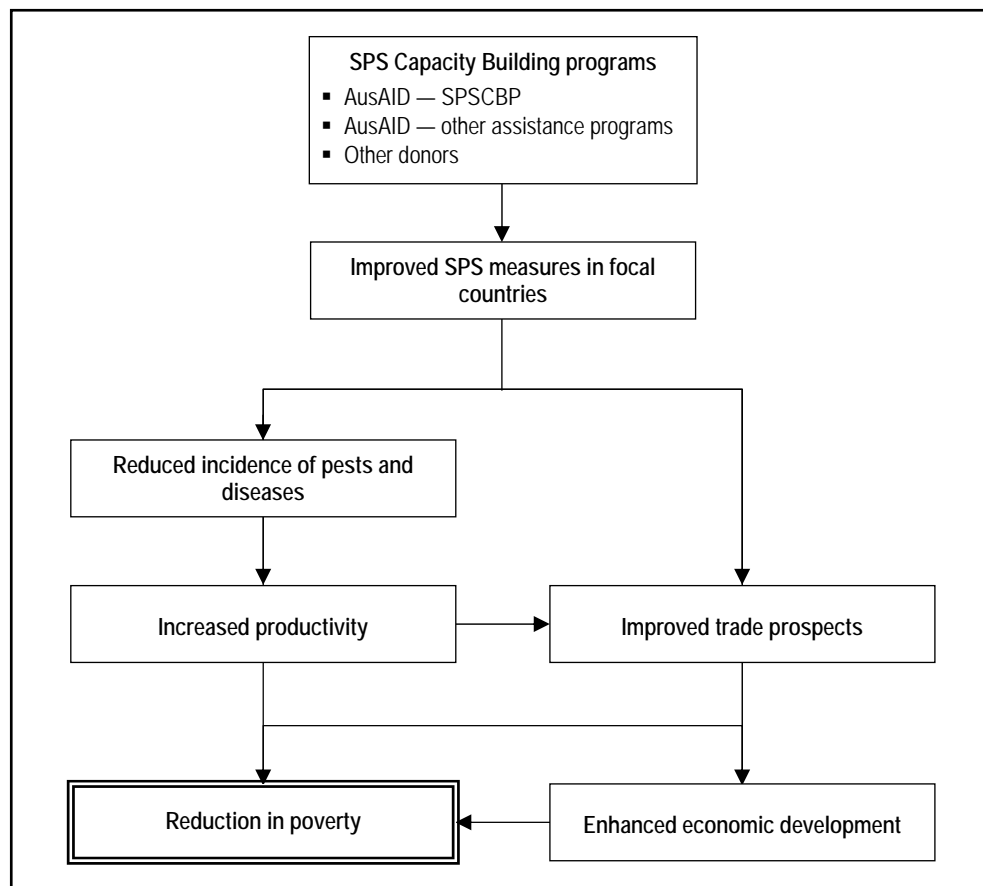
APPENDIX G – CAPACITY BUILDING (PLANT) - VIETNAM

Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Bui Thi Tuyet Nhung	SPS Awareness, Collection Rehabilitation, Diagnostics	Short-term training in SPS Awareness, Plant Disease Specimen Preservation, Curation and Data Management, Diagnostics of Plant Pathogenic Fungi and ASEAN Regional Diagnostics Network Planning	F	Vice Director	Plant Quarantine Experiment Group, Centre for Plant Quarantine Diagnosis, Plant Protection Department, Ministry of Agriculture and Rural Development
Chu Hong Chau	Pest Risk Analysis	Short-term training in Plant Pest PRA	M	Technical/ Plant Quarantine Officer	Plant Protection Department, Ministry of Agriculture and Rural Development
Dr Dam Quoc Tru	SPS Awareness	Short-term training during SPS Study Tour	M	Deputy Director General	Plant Protection Department, Ministry of Agriculture and Development
Dang Thi Binh	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F	Researcher	Institute of Plant Protection, Entomology Division, National Institute of Plant Protection, Ministry of Agriculture and Rural Development
Diem Thi Ngoc Huynh	Diagnostics	Short-term training in Diagnostics of Seed-borne Rice Diseases	F	Forecaster of Plant Protection	Southern Regional Plant Protection Center
Dinh Van Thanh	Pest Risk Analysis	Short-term training in Plant Pest Risk Analysis (PRA)	M	Deputy Head	Phytoimmunology Division, National Institute for Plant Protection
Do Thi Hien	Data Standards	Short-term training in Data Standards and Information Management	F	Director	Northern Plant Protection Centre, Plant Protection Department, Ministry of Agriculture and Rural Development
Hoang Kim Thoa	SPS Awareness, Collection Rehabilitation, Diagnostics	Short-term training in SPS Awareness, Arthropod Preservation, Curation and Data Management and Diagnostics of Phytophagous Mites (Acarina)	F	Technical Officer	Plant Quarantine Diagnostic Centre, Plant Protection Department, Ministry of Agriculture and Rural Development
Le Nhat Thanh	Diagnostics	Short-term training in Diagnostics of Citrus Greening Disease (HLB)			The Centre for Post Entry Plant Quarantine
Nguyen Manh Thuy	Diagnostics	Short-term training in Diagnostics of Key Pest Lepidoptera		Chief of Technology Division	Northern Plant Protection Centre, Plant Protection Department, Ministry of Agriculture and Rural Development
Dr Nguyen Nhu Cuong	Pest Risk Analysis	Short-term training in Plant PRA		Deputy Head of Entomology Division	Plant Protection Research Institute (PPRI), Ministry of Agriculture and Development
Nguyen Quang Hieu	Pest Risk Analysis	Short-term training in Plant PRA	M	Quarantine Officer	Plant Quarantine Division, Plant Protection Department, Ministry of Agriculture and Rural Development
Nguyen The Thinh	Diagnostics	Short-term training in Diagnostics of Plant-sucking Bugs (Hemiptera)	M	Researcher	Division of Pest Diagnostic and Identification, National Institute Plant Protection
Nguyen Thi Anh	SPS Awareness	Short-term training in SPS Awareness for Plant Health and SPS Awareness	F	Technical Officer	Plant Quarantine Subdepartment III, Plant Protection Department, Ministry of Agriculture and Rural Development
Nguyen Thi Phuong Thanh	SPS Awareness	Short-term training in SPS Awareness and Plant PRA	F	General Secretary	Vietnamese SPS Notification and Inquiry Office, Ministry of Agriculture and Rural Development
Nguyen Van Liem	Diagnostics	Short-term training in Diagnostics of Phytophagous Mites (Acarina)	M	Researcher - Deputy	Division of Pest Diagnostic and Identification, Plant
Nguyen van Van	Data Standards	Short-term training in Data Standards and Information Management	M	Head	Scientific and International Cooperation Division, National Institute of Plant Protection
Nguyen Viet Hai	Pest Risk Analysis Train-the-Trainer	Short-term training in Plant PRA Train-the-Trainer	M	Plant Quarantine Officer	Plant Protection Department, Centre for Post Entry Quarantine No 2
Dr Pham Van Lam	Diagnostics	Short-term training in ASEAN Regional Diagnostics Network Planning	M	Entomologist	Plant Protection Research Institute, Chem, Tu Liem
Phan Thanh Hang	SPS Awareness	Short-term training in SPS Awareness for Plant Health	F	Officer	Plant Quarantine Division, Plant Protection Department, Ministry of Agriculture and Rural Development
Phan Thi Bich Huong	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Arthropod Preservation, Curation and Data Management	F	Vice Director	Plant Quarantine Subdepartment Region 5, Plant Protection Department, Ministry of Agriculture and Rural Development
Quach Thi Ngo	SPS Awareness	Short-term training in SPS Awareness	F	Researcher (Senior Entomologist)	National Institute for Plant Protection, Ministry of Agriculture and Rural Development

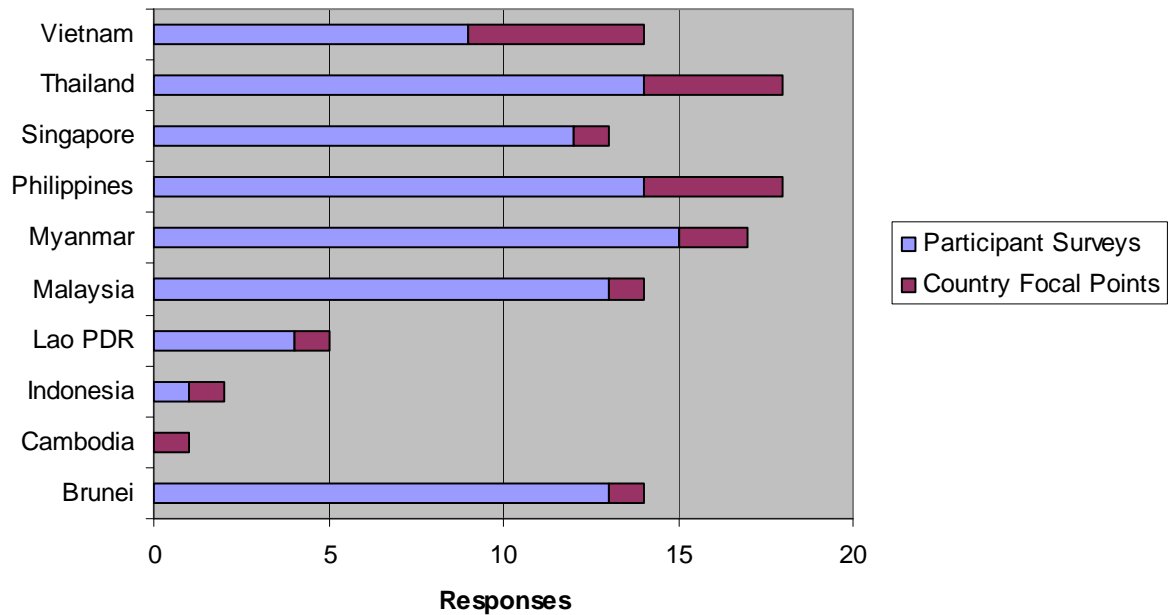
Name	Capacity Built	Means of Capacity Building	Gender	Position	Agency/ Organisation
Tran Dinh Sinh	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	F	Researcher - Plant Pathologist	National Institute for Plant Protection (NIPP), Ministry of Agriculture and Rural Development
Truong Thi Ly	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	F	Pathologist	Plant Quarantine Diagnostic Centre, Ministry of Agriculture and Rural Development
Vu Manh Tri	SPS Awareness, Collection Rehabilitation	Short-term training in SPS Awareness and Plant Disease Specimen Preservation, Curation and Data Management	M	Deputy Manager	Surveillance Division, Center for Post Entry Plant Quarantine, Plant Protection Department, Ministry of Agriculture and Rural Development

APPENDIX H – FIGURES

Figure 1. Links between SPS and poverty reduction (Source: Anon., 2003)



**Figure 2. Total number of responses to AMC Evaluation Survey
(Source: AMC Evaluation Survey)**



**Figure 3. Gender of SPS CBP activity participants (Source:
AMC Evaluation Survey)**

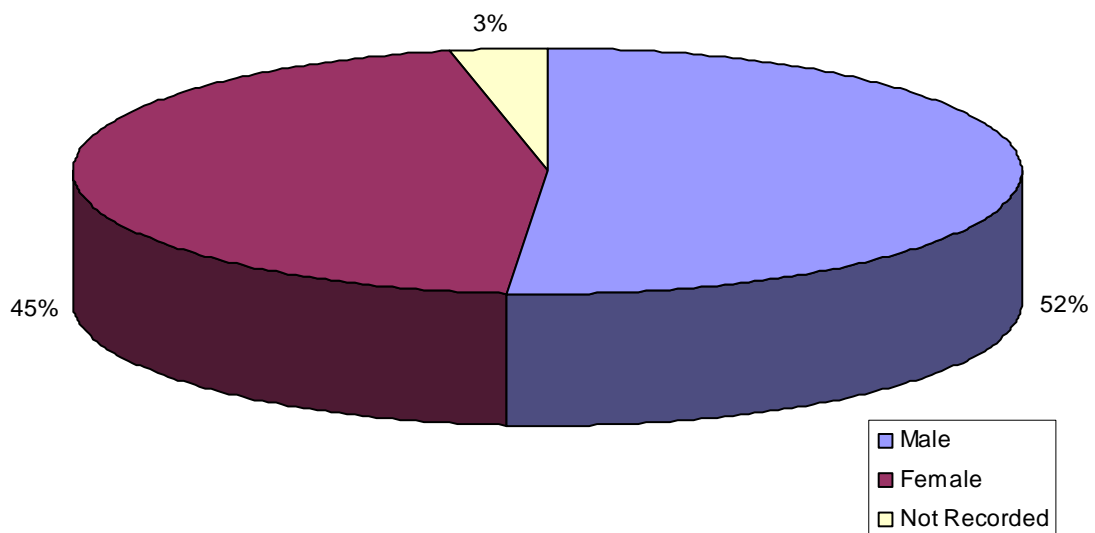


Figure 4. Overall rating of SPS CBP activities as helping with work, compared to other programs (Source: AMC Evaluation Survey)

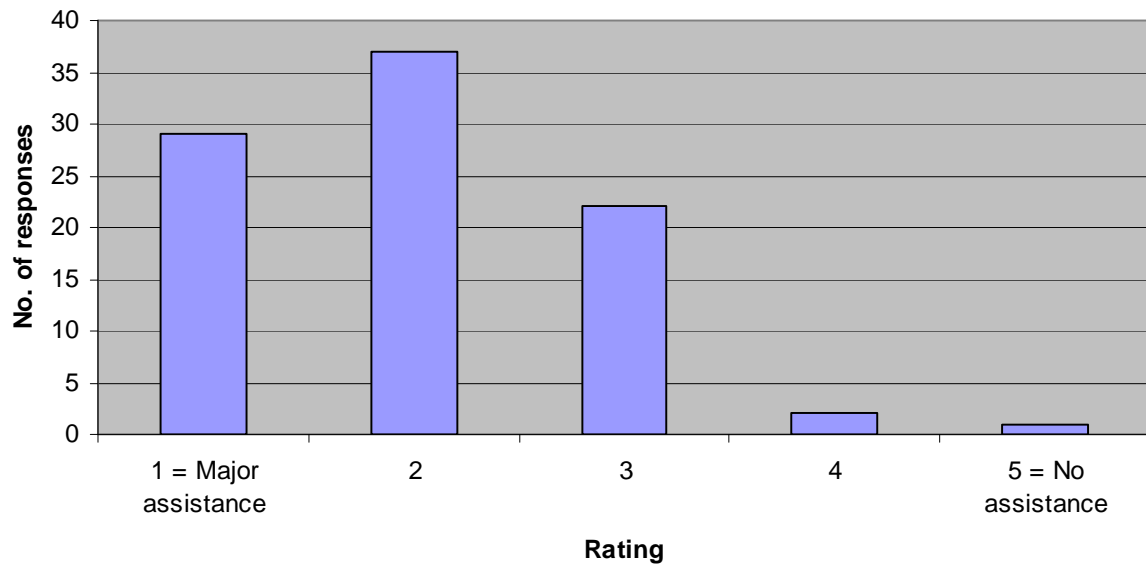


Figure 5. Participation in ISPM standard setting (Source: Data from IPPC at <http://www.ipc.int>)

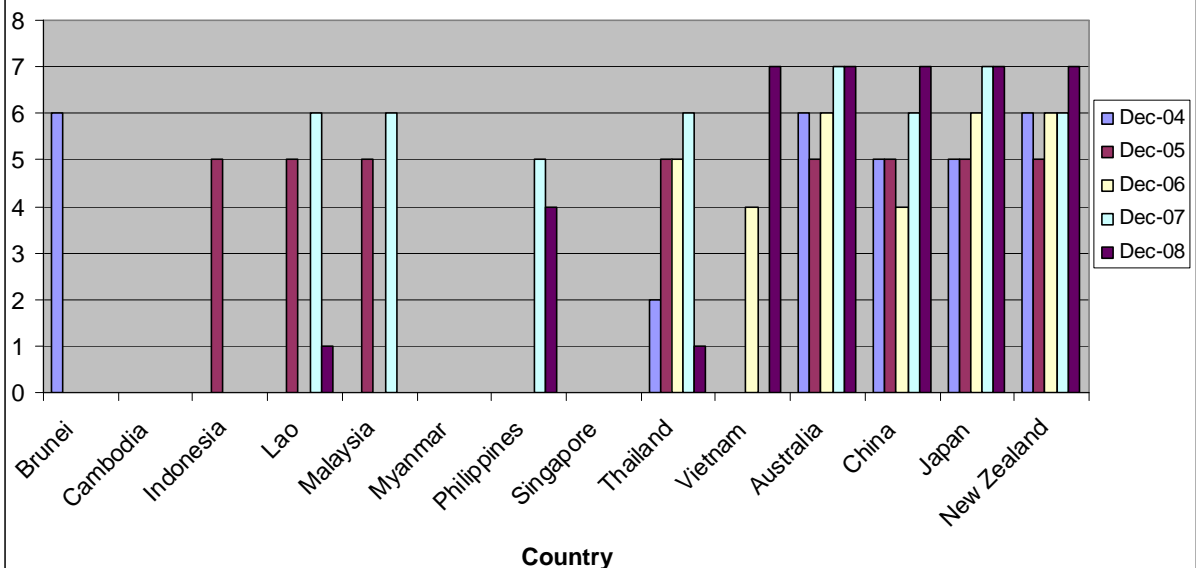


Figure 6. Frequency of sharing workshop materials (e.g. manuals) with colleagues (Source: AMC Evaluation Survey)

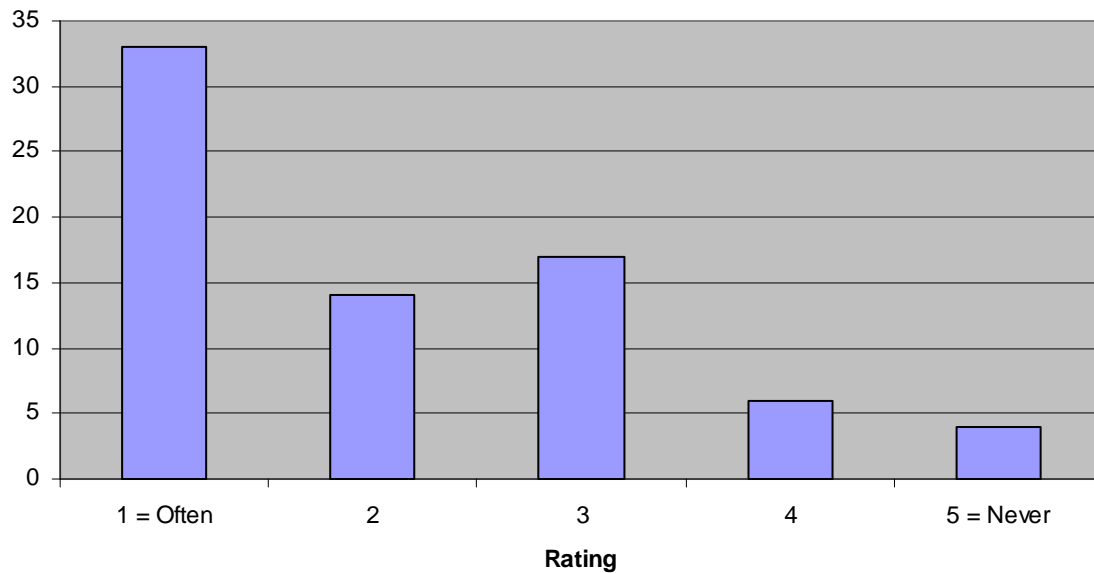


Figure 7. Percentage of respondents who read the SPS booklet (Source: AMC Evaluation Survey)

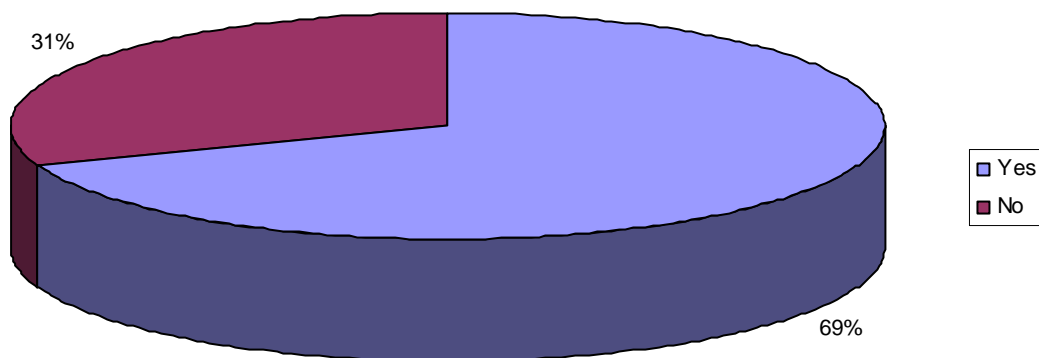


Figure 8. Rating of usefulness of SPS Booklet (From respondents who had read booklet) (Source: AMC Evaluation Survey)

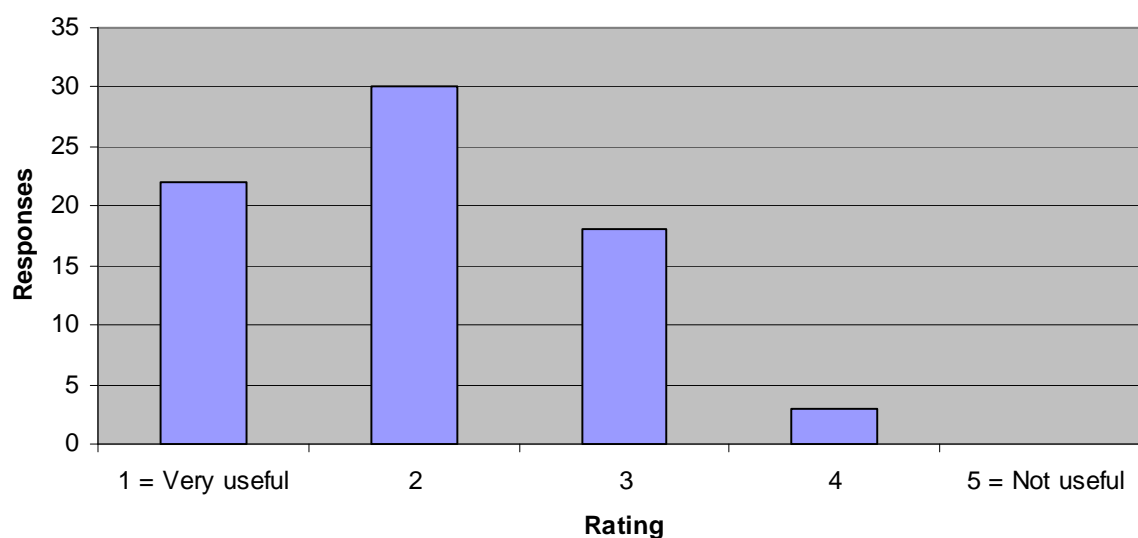


Figure 9. Assessment of how much a country has improved its capacity to identify plant pests and diseases over the past three years (assessments by senior officials) (Source: AMC Evaluation Survey)

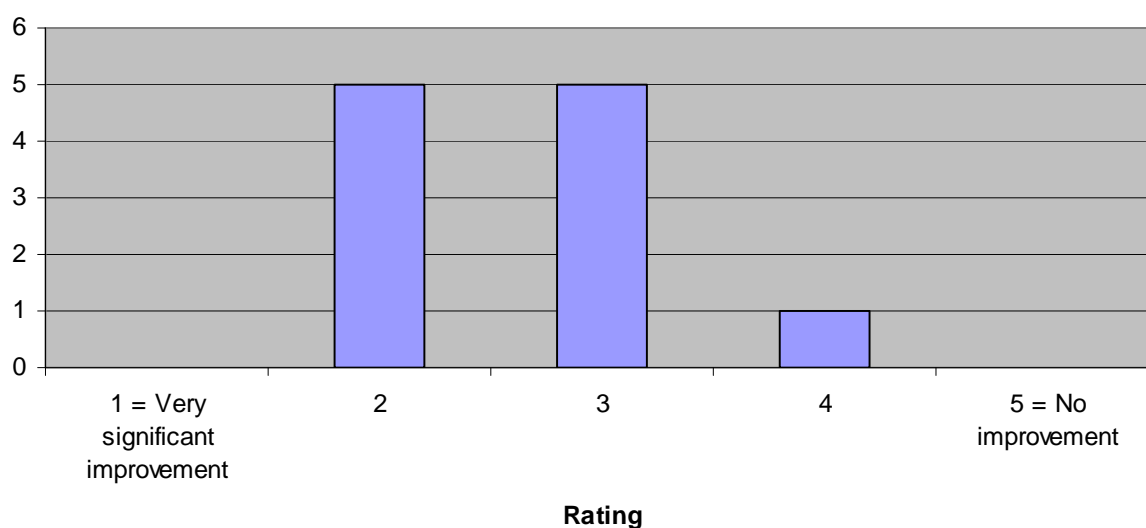


Figure 10. Assessment of impact of training provided by the SPS CBP on improving national capacity to identify plant pests and diseases compared to impact of other programs (assessments by senior officials) (Source: AMC Evaluation Survey)

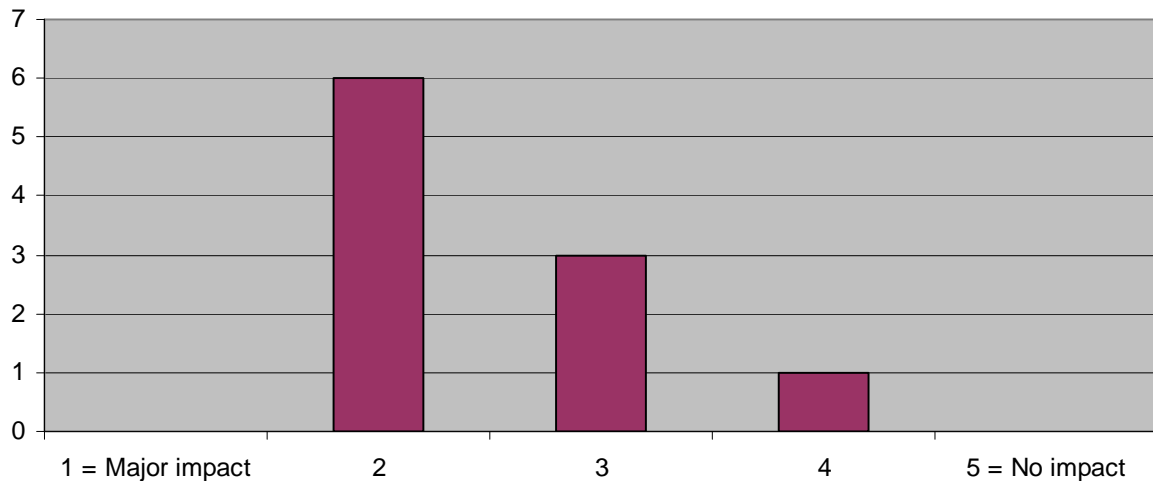


Figure 11. Number of specimens identified since participating in SPS CBP diagnostics workshops (Source: AMC Evaluation Survey)

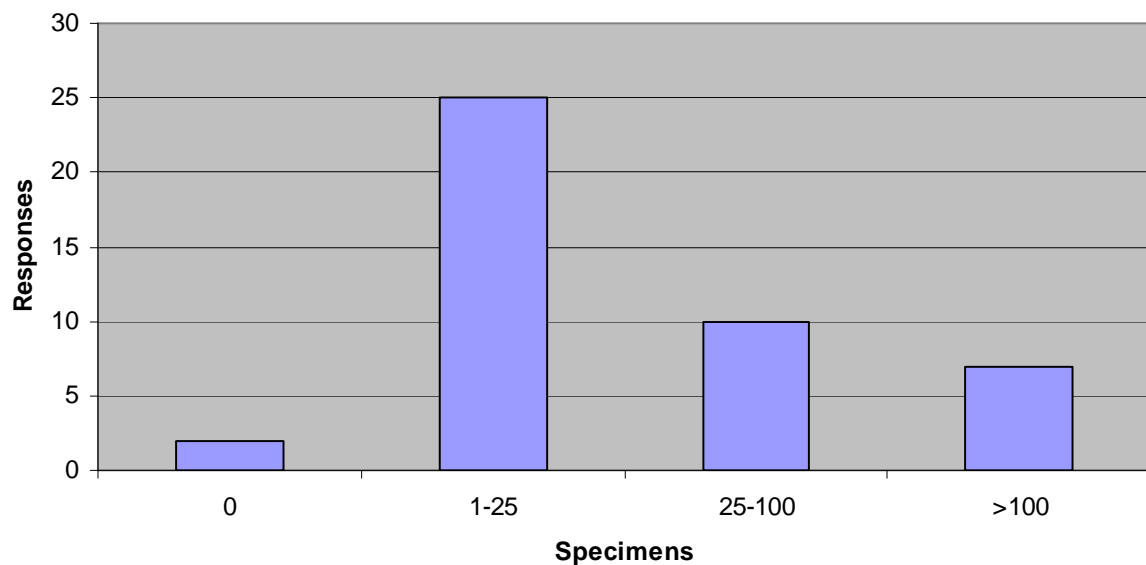


Figure 12. Percentage of specimens identified by workshop participants (Source: AMC Evaluation Survey)

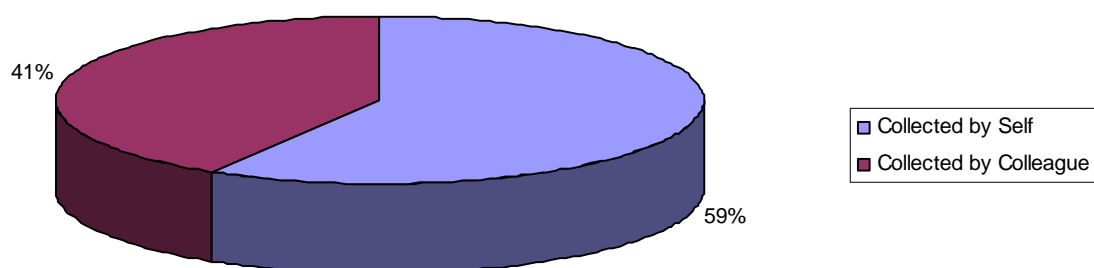


Figure 13. Subsequent level of confidence in performing diagnostics among SPS CBP workshop participants (Source: AMC Evaluation Survey)

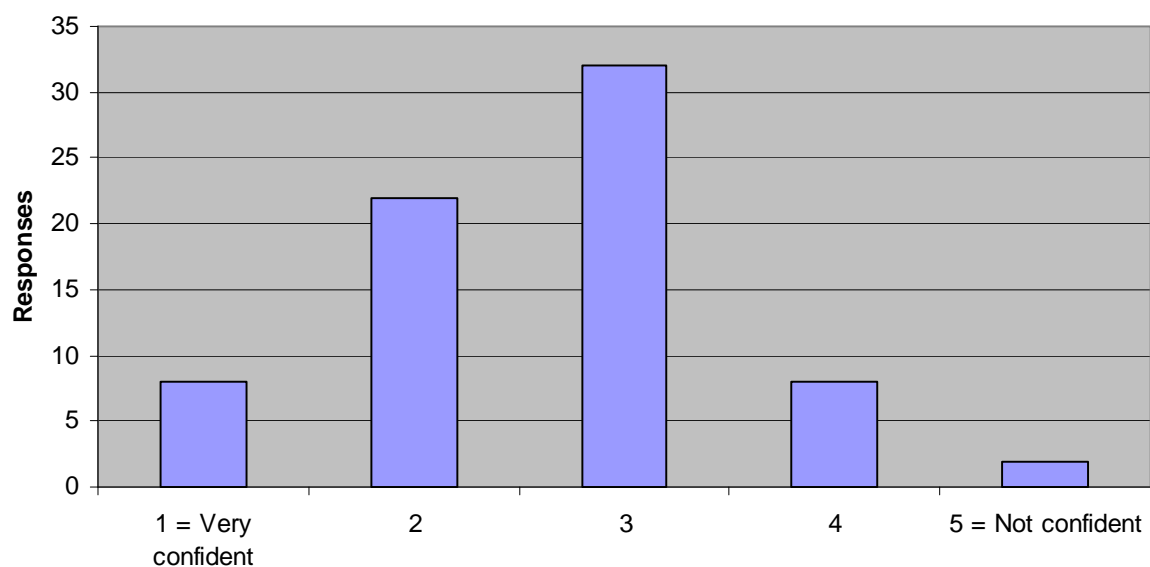


Figure 14. Responses to question: "Has your country sent any specimens or samples to another country for diagnosis or confirmation of diagnosis?" (Source: AMC Evaluation Survey)

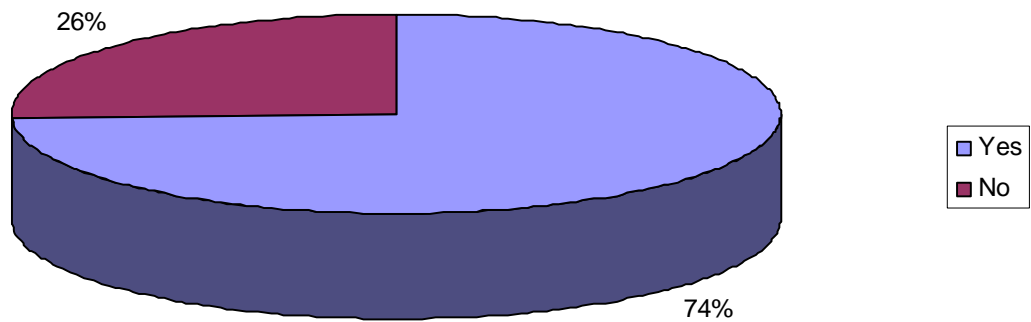


Figure 15. Responses to question asking whether more or less specimens have been sent to another country for identification (Source: AMC Evaluation Survey)

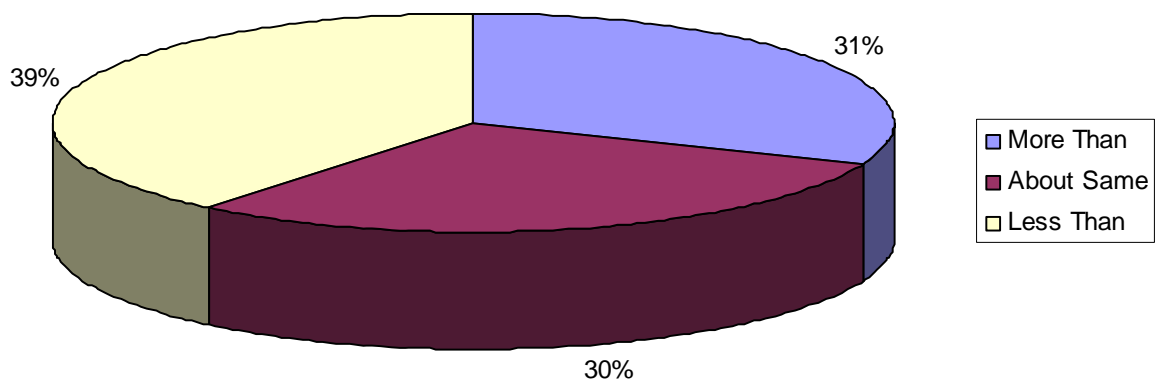


Figure 16. Frequency of particular difficulties cited in performing diagnostics
(Source: AMC Evaluation Survey)

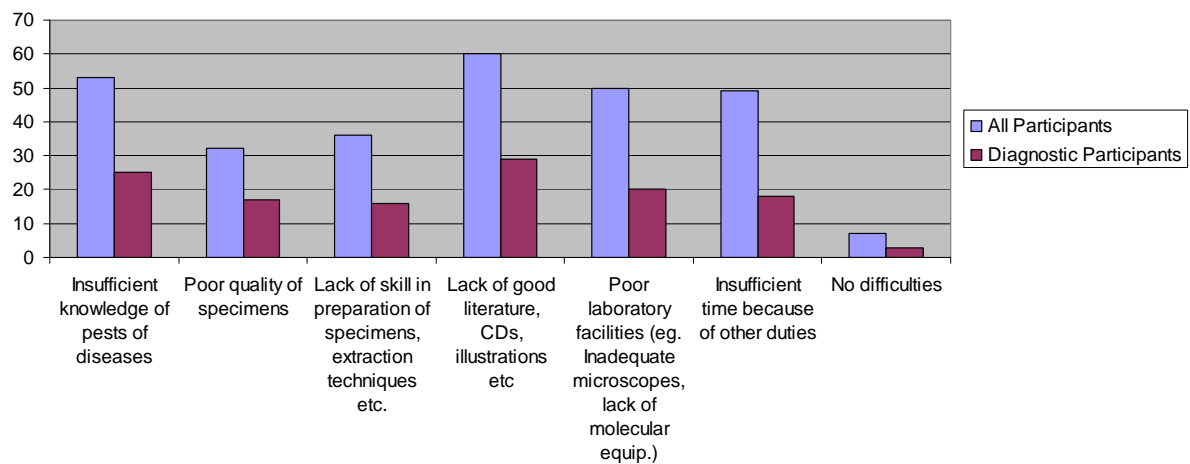


Figure 17. Number of fungal specimens sent by Singapore (per decade)
(Source: CABI Fungal Database)

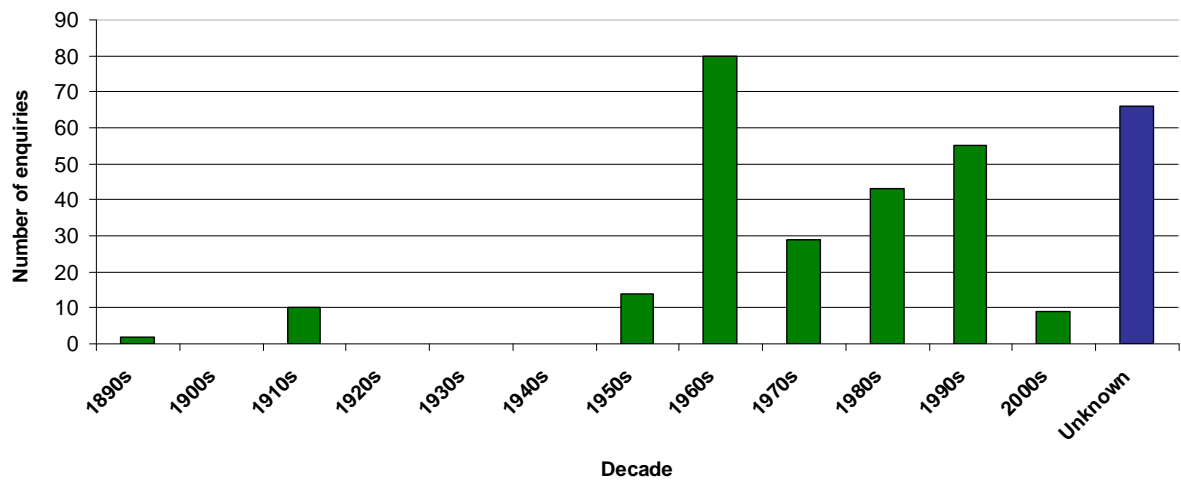


Figure 18. Number of fungal specimens sent by the Philippines (per decade) (Source: CABI Fungal Database)

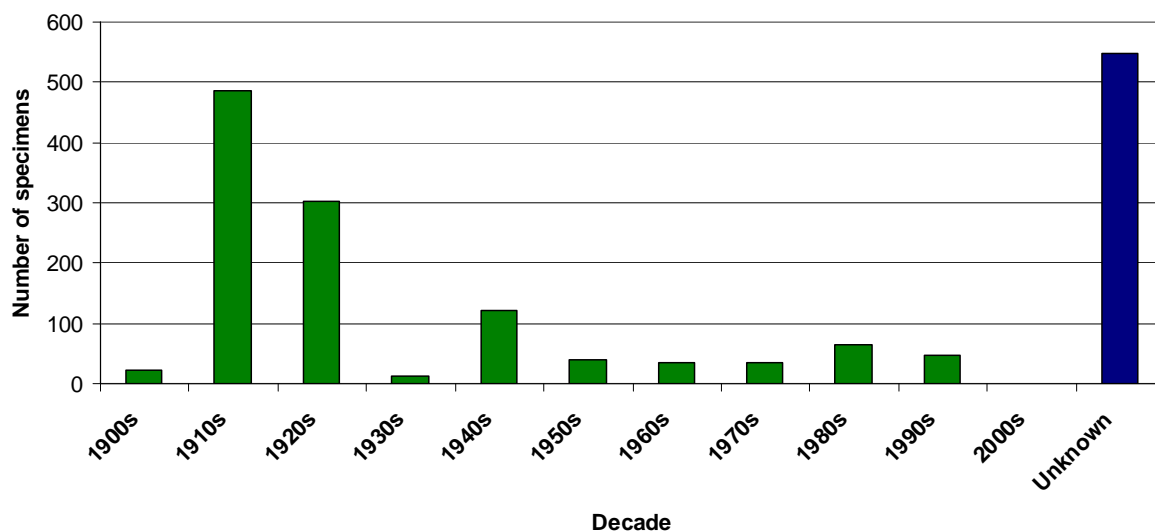


Figure 19. Type of organisms reported in CABI Crop Protection Compendium for the ASEAN region (Source: CABI Crop Protection Compendium)

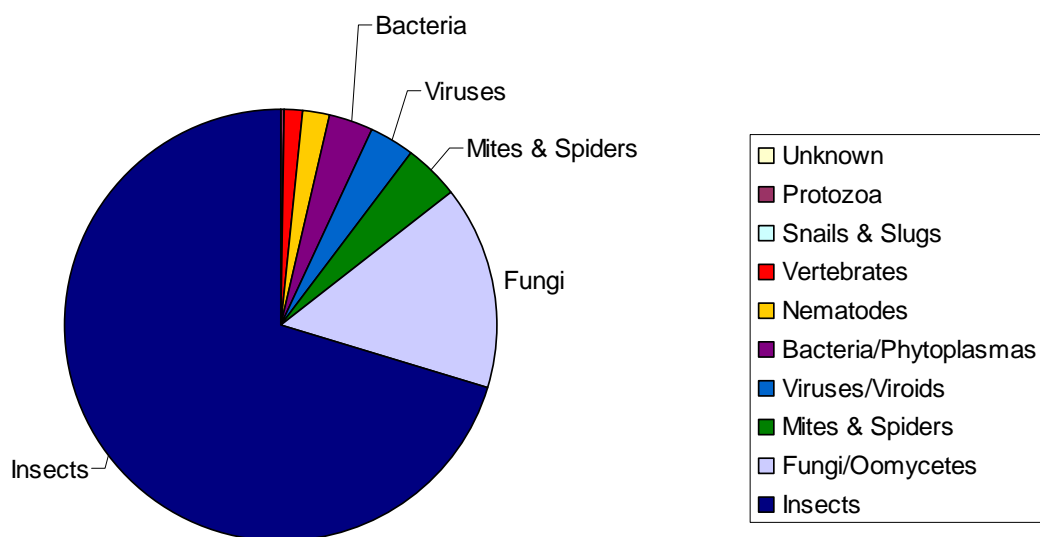


Figure 20. Type of organisms reported on PestNet.org
(Source: PestNet.org)

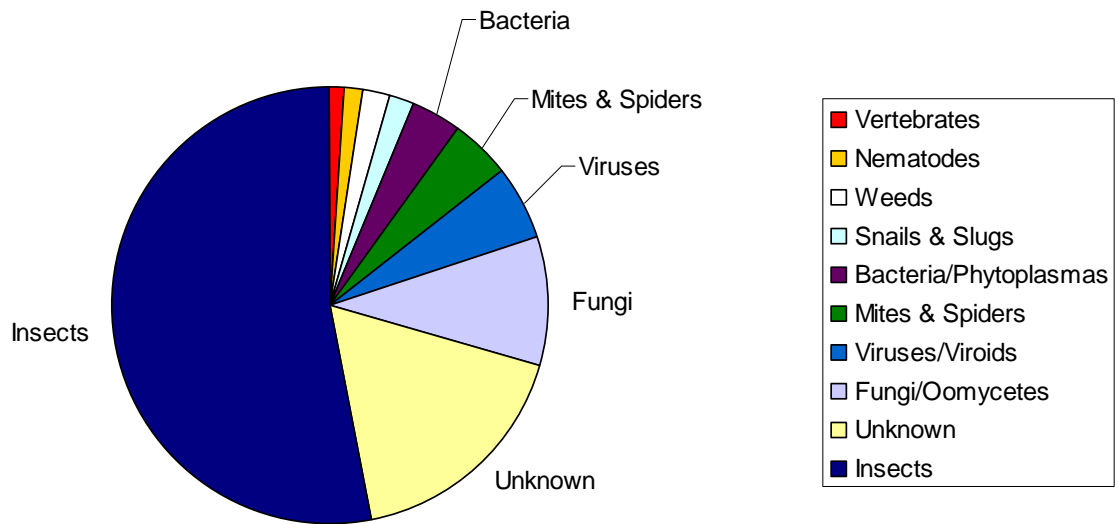


Figure 21. Frequency of groups discussed on Pestnet.org
(Source: Pestnet.org)

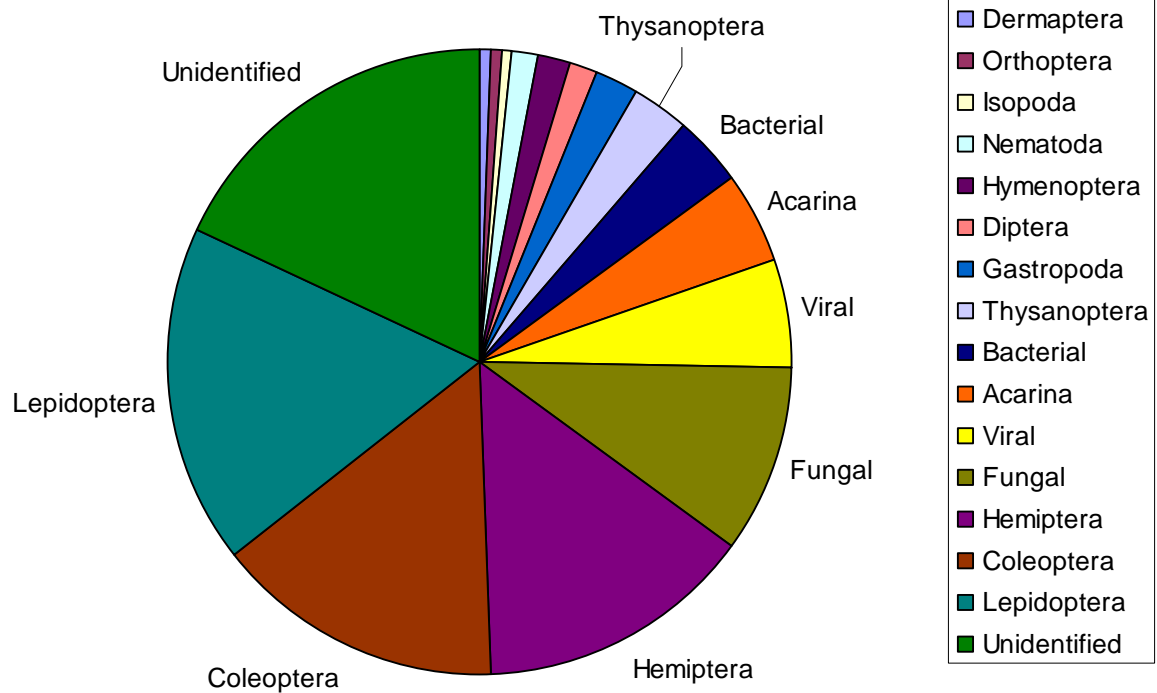


Figure 22. Responses to question: "Would you make use of a regional diagnostic workshop?" (Source: AMC Evaluation Survey)

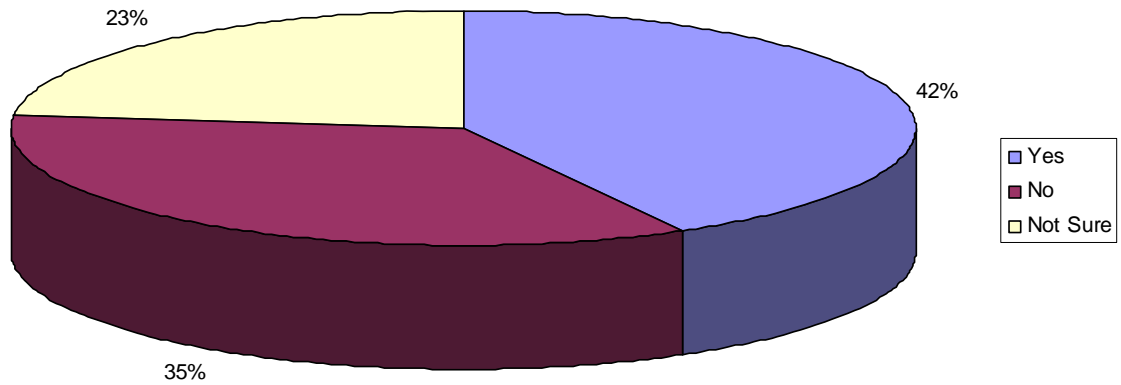


Figure 23. Percentage of SPS CBP workshop participants currently involved in collecting, processing or identifying specimens or samples (Source: AMC Evaluation Survey)

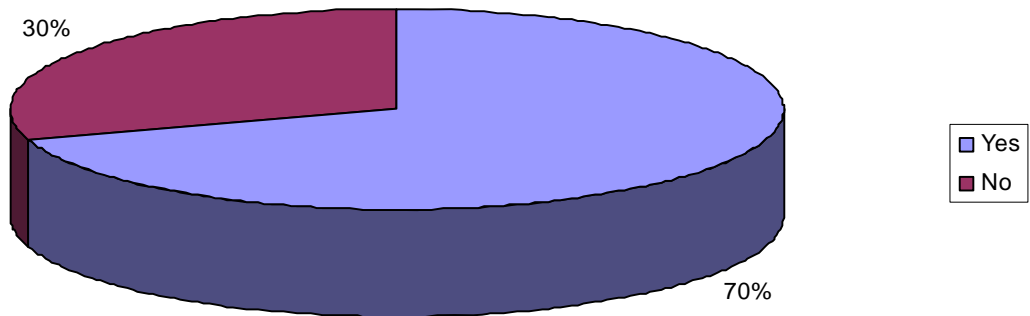


Figure 24. Frequency of skills acquired in SPS CBP workshops being used in surveys (Source: AMC Evaluation Survey)

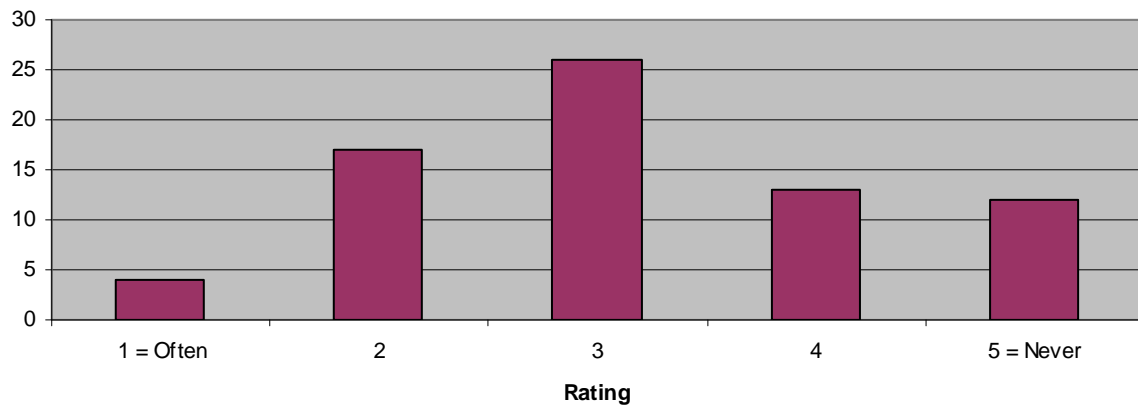


Figure 25. Assessment of whether preparation, labelling and storage of specimens meet the International Standards (assessments by senior officials) (Source: AMC Evaluation Survey)

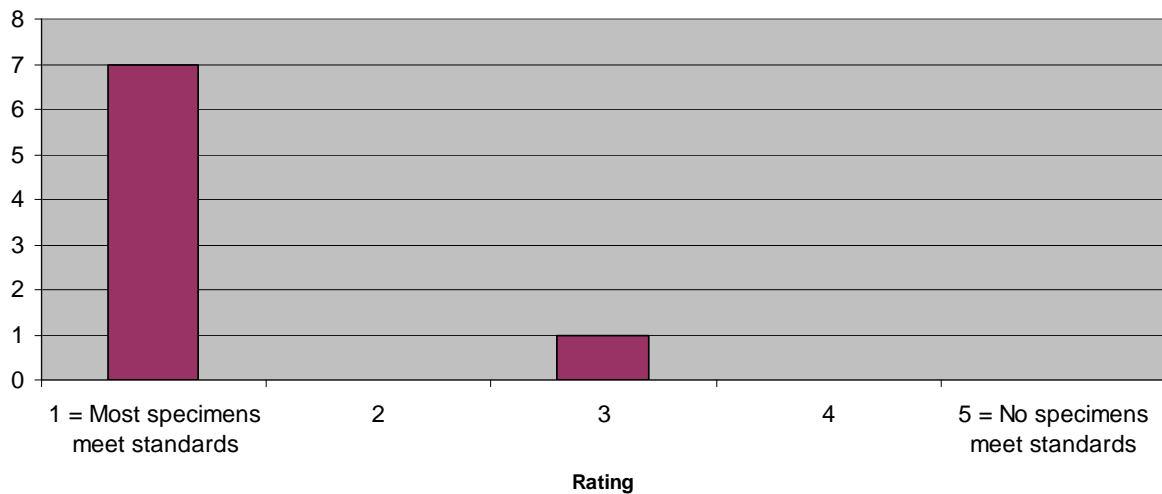


Figure 26. Usefulness of reference collections (assessments by workshop participants) (Source: AMC Evaluation Survey)

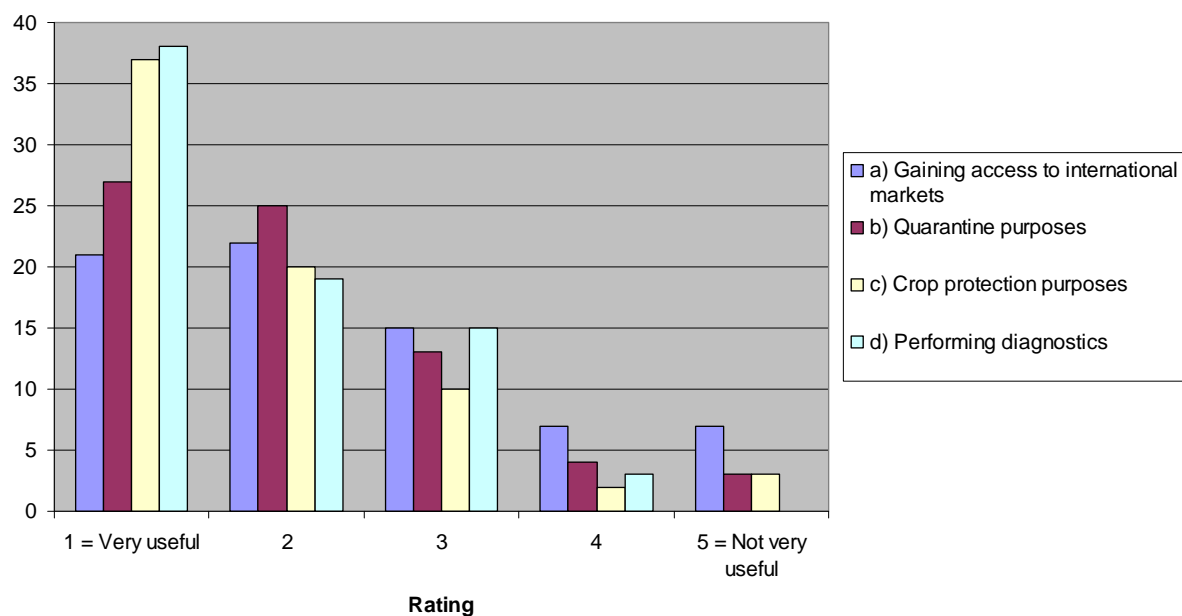


Figure 27. Impact of SPS CBP training on national PRA skills (assessments by senior officials) (Source: AMC Evaluation Survey)

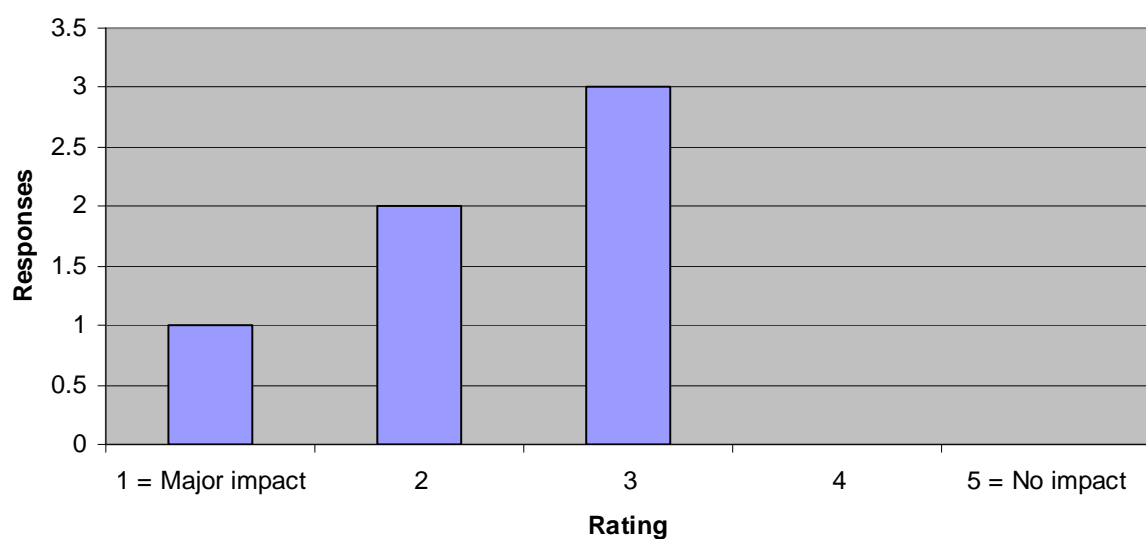


Figure 28. Percentage of PRA workshop participants who have used risk analysis in their work (Source: AMC Evaluation Survey)

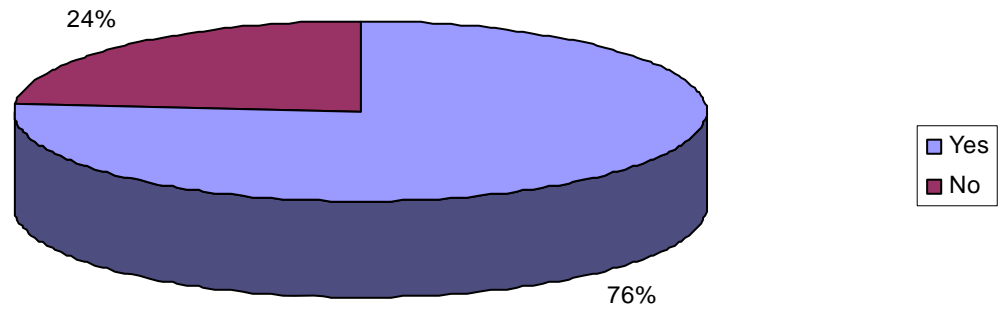
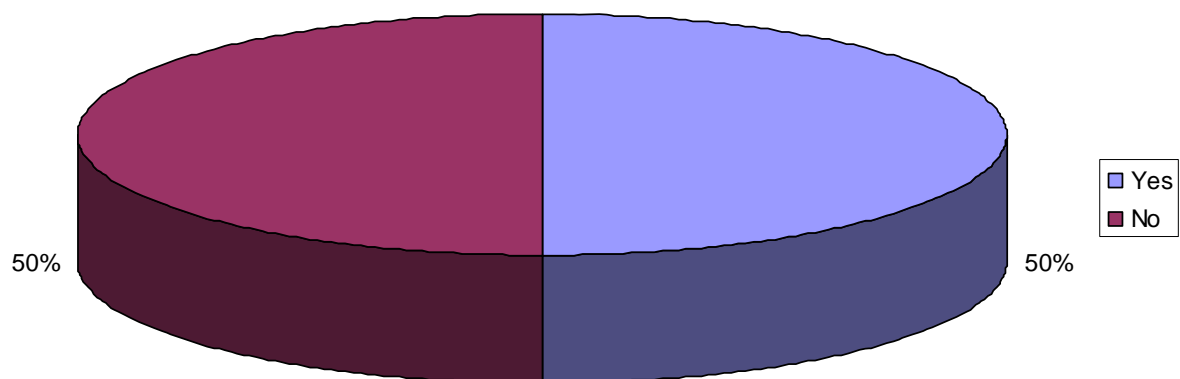
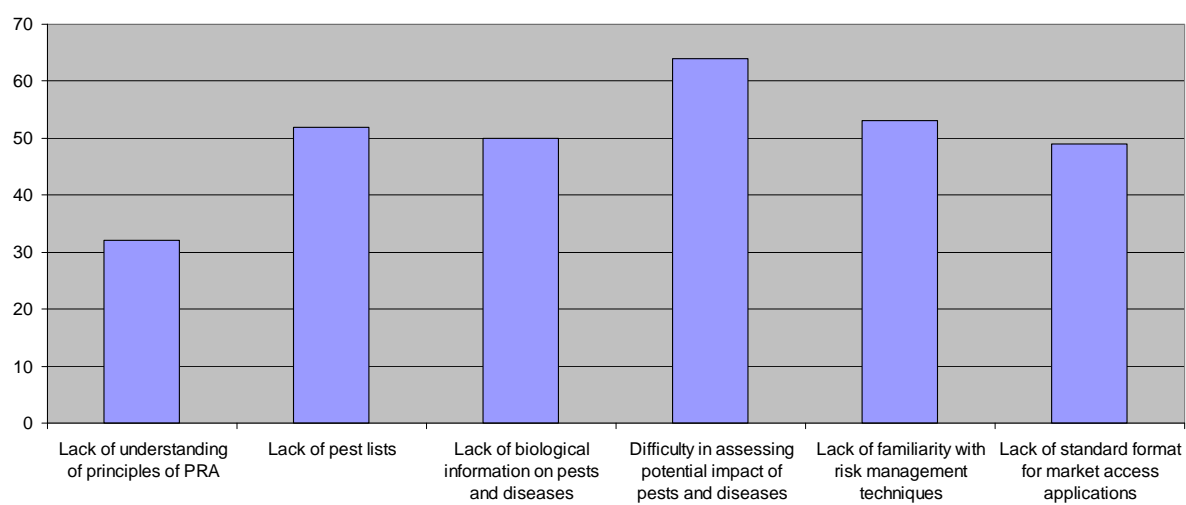


Figure 29. Percentage of PRA workshop participants who have performed a formal PRA (Source: AMC Evaluation Survey)



**Figure 30. Frequency of particular difficulties cited in performing PRA
(assessments by workshop participants) (Source: AMC Evaluation Survey)**



APPENDIX I – SPS CBP RISK MANAGEMENT PLAN



Australian Government

AusAID

Department of Agriculture,
Fisheries and Forestry

Sanitary and Phytosanitary Capacity Building Program

RISK MANAGEMENT PLAN

27 January 2009

Due primarily to the relatively large number of countries, agencies and donors involved in SPS issues in South-East Asia, and the evolving nature of SPS measures, the SPS CBP presents substantial management and coordination challenges. Achieving the desired outcome within a limited period of time is feasible, although ambitious and associated with a relatively high level of risk, particularly in Cambodia, Lao PDR and Myanmar, which have relatively fewer resources to allocate to SPS issues. All risks are monitored routinely during the implementation of the SPS CBP and the risk management matrix is reviewed during the annual planning process.

The Program Design contains a number of features to help reduce the impact of potential risks. For example:

- DAFF plays a central role in the implementation of the Program, in large, because of their previous work in the Region and knowledge of agencies and individuals involved. DAFF's experience in the Region, and their reputation, will allow engagement at higher levels, and encourage participation by the most suitable candidates. This will help address the difficulties of managing and coordinating a Program that involves a large number of countries, agencies and donors.
- The senior level study tour to Australia (Component 1 of the Program) highlights the need for additional support for SPS issues, including the need for an adequate regulatory and institutional framework.

- The selection of appropriate Country Focal Points is integral to the management of risks through facilitating effective engagement with key stakeholders in each focal country.
- The annual planning process enables the AMC to respond to other donor initiatives and emerging priorities, helping to avoid duplication of donor efforts and failure to address important aspects relating to SPS capacity building.
- Establishing links with bilateral programs provides an opportunity to build on the SPSCBP and, potentially, provides assistance in some areas which would otherwise reduce the effectiveness of the Program (e.g. regulatory and/or institutional support). Establishing links with the bilateral programs in Cambodia, Lao PDR, Myanmar and Vietnam is seen as particularly important given the need for longer-term capacity building support in these countries.

The following Risk Management Matrix has been drawn up with reference to AusAID guidelines in “AusGuideline. Managing Risk” (2005).

Risk Management Matrix

Risk Event	Source/s of Risk	Impact on Program	L	C	R	Risk Management	Responsibility
Political/Economic							
Lack of senior political and industry acceptance of Standards and Guidelines and support for changing SPS related practices.	Senior managers, policy makers, industry leaders do not understand and promote linkages between SPS Agreement and trade. Key officials do not participate in study tour, do not support changes, or fail to initiate change before moving to other appointments.	The immediate training benefits and the longer term benefits of trade facilitation would be limited. Achievement of program objective and sustainability of outcomes would be threatened.	2	4	H	Provide influential figures with practical demonstrations of implementation of SPS obligations on Australian study tour. Include some regional, SPS-aware senior officials in study tour as change agents. Provide senior officials with financial information to substantiate potential returns on SPS-related investments. Include deputies in review of outcomes of study tour. Report annually to ASWGC, ASWGL and other high level, bilateral meetings (e.g. under auspices of Free Trade Agreements) attended by senior officials and where SPS capabilities are set in a trade and market access context.	AMC
Some participants may be unwilling or unable to travel to international events and training.	Increasing security concerns in the Region resulting in travel restrictions or lesser priority given to activities requiring travel.	Regional benefits, particularly in network building, will be undermined if not all countries participate.	3	3	H	All participating countries will be encouraged to host activities internally. Holding Activities in the region rather than in Australia should reduce the effect of any travel restrictions. Planning to include consideration of alternate venues, activities and scheduling.	AMC, CFPs
SPS issues are not given sufficient priority to attract necessary resources.	Competing priorities, including newly emerging disease threats, limit capacity of trainees to apply skills and demonstrate the program's benefits. Resources of Ministries and private sector insufficient to initiate	Inadequate priority given to SPS issues would limit the immediate training benefits and the longer term benefits of trade facilitation.	3	3	H	Include key advisors (including related Ministries and organisations – such as finance and trade) in awareness workshops. Maintain focus through DAFF networks on ASWGC and ASWGL agendas. AMC monitors emerging diseases, in consultation with DAFF technical advisory group and heads of regional animal health agencies.	AMC

Risk Event	Source/s of Risk	Impact on Program	L	C	R	Risk Management	Responsibility
	change.					Training to include practical examples relevant to these priorities.	
ASEAN Working Groups do not engage effectively with the program.	ASWGL unwilling to endorse trade study report and/or Standards and Guidelines adopted by Workshop. Manual/s not endorsed by ASWGL.	Lack of endorsement at ASEAN level could undermine progress at national levels. Credibility of program outcomes for meeting WTO requirements could be undermined.	2	4	H	Chair of ASWGL and relevant advisory working groups to participate in workshop. Terms of reference of study endorsed by ASWGL prior to commencement. Draft report to be provided to Chair ASWGL prior to finalisation. Senior members of ASWGL or advisors to participate in preparation of Manual.	AMC
Consultant for trade study unable to gather essential information.	Consultant lacks requisite contacts, experience and skills to deal with ASEAN counterparts.	Quality and relevance of study would be questionable.	1	4	H	Consultant to be selected on the basis of demonstrated experience in ASEAN. AMC to develop list of initial contacts in each country and assisted consultant to seek information from both private and public sector organisations. Study to emphasise case studies for which data are available if comprehensive, regional information cannot be obtained.	AMC
Institutional							
Some countries unable to meet SPS measures required for international trade.	Inadequate regulatory and institutional frameworks for implementing SPS measures.	The benefits to trainees from effected countries would be undermined. Benefits from enhanced trade opportunities would be reduced or lost.	3	4	H	Links to be established with bilateral programs in those countries where institutional capacity is weak, in order to identify and support appropriate national capacity building.	AMC, CFPs
National agencies fail to cooperate and coordinate on SPS issues and measures.	Inadequate understanding of the need for cooperation. Lack of institutional basis for cooperation and reluctance to share sensitive information.	Effected countries' capacity to meet SPS standards will be compromised.	3	3	H	Training and workshop activities to involve participants across sectors and include demonstrations of the benefits of effective cooperation.	AMC
Participants are unable to influence activities	Participants selected for training do not have	Benefits of training will be undermined and the	2	4	H	Consult with focal points on most appropriate participants.	AMC

Risk Event	Source/s of Risk	Impact on Program	L	C	R	Risk Management	Responsibility
within their own agencies.	appropriate backgrounds and/or seniority to act as change agents for their organisations.	sustainability of program outcomes will be threatened.					
Technical							
Questionable capacity to benefit from technical training in some countries.	Limited numbers of technical staff and their level of training inadequate, including (technical) English language capability.	Overall benefits of participating in the program will be undermined. Data sharing may not happen and sustainability of program outcomes will be threatened.	4	4	E	AMC to develop suitable selection criteria, including for English Language. Participants selected with assistance of heads of plant/animal health agencies, CFPs, and DAFF technical advisory group. Selection of trainers and development of training materials to take account of likely variation in English language skills. Addition of in-country mentoring to selected activities. Develop plans for long-term engagement of participating individuals and institutions in regional, specialist networks. Identify participants for advanced training, including formal tertiary level enrolments.	AMC, CFPs
Standards and guidelines not adopted by workshop participants.	Agreement on standards and guidelines not reached within timeframe of workshop.	Key enabling tasks may not be completed. Increased risk of ASWG not endorsing guidelines.	3	4	H	Practical demonstrations of benefits of standards and guidelines at Workshop. Technical training needs to be identified in close cooperation with home institutions. Pilot studies undertaken. ?	AMC
Participants unable to apply PRA and other skills effectively due to lack of resources in home institution.	Training not appropriate to level and type/s of resources available in home institutions. Participants' home institutions lack reliable	Participants will be unable to fully realise the benefits of their training and apply the standards and guidelines.	3	3	H	Contractors required to develop appropriate manuals and flexible training programs. Workshop to provide participants with essential literature, and diagnostic techniques appropriate to equipment etc of home institutions.	AMC

Risk Event	Source/s of Risk	Impact on Program	L	C	R	Risk Management	Responsibility
	diagnostic tools and suitable plant health data.					Awareness among senior and middle managers of importance of reference collections enhanced. Status of reference collections enhanced by listing in printed and internet publications. Other components of SPSCBP, AADCP, international donors and bilateral initiatives to give sufficient priority to developing essential information resources.	
Participants do not apply skills on return to home institutions.	Technical staff do not recognise the importance of SPS linkages.	Training benefits will be undermined. Data sharing may not happen and sustainability of program outcomes will be threatened.	2	3	M	Practical demonstrations of benefits at workshop. Participants advised that there will be follow-up assessment of application of skills. Training contractor to identify follow-up “projects” to promote networking, e.g. updating of diagnostic tools.	AMC
Researchers and university staff not committed to technical training needs.	Failure to understand linkages between academic disciplines and SPS issues. SPS not seen as high enough priority to commit limited resources.	Capacity for technical training within countries may not improve. Sustainability of program outcomes after program ends may be undermined.	3	3	H	Invite key influential scientific and university figures to workshops. AMC makes or promotes presentations on SPS issues at key regional scientific fora. Present benefits of, and opportunities for, joint applied research at workshops.	AMC
Awareness booklet unsuccessful in improving understanding of SPS linkages	Booklet fails to explain linkages clearly. Booklet not distributed effectively or in sufficient numbers.	Credibility of program may be undermined.	2	3	M	Draft of booklet to be reviewed by in-country experts and readers unfamiliar with SPS Agreement before finalising. Booklet distributed at Program workshops and other appropriate fora and through CFPs. Electronic version booklet made available to national plant and animal health organisations and on Program website.	AMC

Risk Event	Source/s of Risk	Impact on Program	L	C	R	Risk Management	Responsibility
Management							
Inappropriate or unbalanced mix of trainers and/or training skills.	Lack of suitably qualified and experienced regional trainers or inappropriate selection process.	The joint aims of building regional expertise and building capacity to deliver training within the region would be jeopardised.	2	3	M	Careful selection of Australian experts for suitable training skills. Consultation with CFPs and DAFF networks for suitable regional trainers, including English language skills.	AMC
Duplication of efforts in some areas and inadequate coverage in others.	Lack of effective coordination with ASEAN bodies and other donors. Overlap with material in other capacity building initiatives.	Inadequate implementation of SPS measures due to uneven or incomplete coverage of SPS issues.	2	3	M	AMC to utilise networks and contacts, including those established with bilateral programs, to monitor and ensure complementary with related activities. AMC liaises with focal points, NPPOs, donors and AusAID to on concurrent or anticipated initiatives. AMC takes other activities into account during tendering process.	AMC, CFPs, AusAID
Country Focal Points do not operate and liaise effectively.	Inappropriate individuals selected. Competing priorities or resource issues reduce CFP effectiveness.	Annual plans may not be endorsed in a timely manner. Support for in-country activities may suffer.	2	4	H	Annual visits by AMC to focal points to secure endorsement and monitor emerging issues. AMC to include CFPs in activities whenever feasible.	AMC
Systems and subcontractors do not deliver inputs effectively.	Systems and contracting processes inappropriate to operational context or inadequately resourced.	Implementation and scheduling of activities unsuccessful. Contractor inputs not made in timely fashion.	3	4	H	DAFF establishes oversight of Program administration through standard line management arrangements. Provision of critical information linked to payment schedule.	AMC
Program activities require substantial or frequent rescheduling.	External events and scheduling difficulties for activities with participants from numerous countries.	Momentum and participant commitment may be lost.	4	3	H	Liaison with AusAID Bangkok to appraise any anticipated rescheduling. Generous lead times for activity planning and participant selection. Retain flexibility of scheduling. Extend duration of Program with DAFF assuming responsibility for additional management costs.	AMC

APPENDIX J – ASEAN REGIONAL DIAGNOSTIC NETWORK STRATEGIC PLAN

22 September 2009

EXECUTIVE SUMMARY

The ASEAN Regional Diagnostic Network is envisaged as a system that would provide identifications of organisms of agricultural importance (especially plant pests, diseases and weeds) detected in the South-East Asian region. This diagnostic facility would service production agriculture, market access and quarantine operations. It would be available to users in the ASEAN region and would draw upon expertise both within and beyond the region. The Network would also provide a framework for enhancing national and regional diagnostic capacity, by building diagnostic skills among ASEAN professionals and developing practical, diagnostic tools relevant to the ASEAN region. The concept of the Network has been endorsed by the ASEAN Sectoral Working Group on Crops.

Clients would forward unknown samples to a Clearing House, to be established in Serdang, Malaysia (see Figures 1 and 2). The Clearing House would have a very small number of staff. Their role would be to make an initial identification, record specimens and consign them to experts drawn from a diagnostic expertise register. In due course, sample and identification would be returned to the Clearing House and thence to the client (Figure 3). The diagnosis would remain confidential until the client elected to publish the record.

International diagnostic standards and best practice will be adopted where available and appropriate. Expertise gaps will be addressed during the initial years of operation through a program of training activities. Gaps in scientific knowledge will be addressed by a program to develop tools and regional resources.

The Network would be overseen by a high-level Advisory Committee and would report to National Plant Protection Organisations of ASEAN member countries through the ASEAN Sectoral Working Group on Crops. Amongst other activities, the Network would support this Working Group's goal to reduce trade impediments by harmonising phytosanitary measures within the ASEAN region. The Clearing House would be managed by a regional, non-government organisation, based in Malaysia (ASEANET) and the program to develop skills and diagnostic resources would be managed by the Australian Government Department of Agriculture, Fisheries and Forestry in consultation with the Clearing House and the Advisory Committee.

Estimated annual budget

Budgets would be developed as part of each annual Operational Plan. It is anticipated that each annual budget would be in the order of \$AUD 100 000 – 120 000 for Network operations and \$AUD 500 000 – 600 000 for capacity building.

Network operation and management

(including maintenance of Clearing House and expertise register, distribution and tracking of specimens, convening of Advisory Committee, communication and implementation of awareness strategy, reporting)

\$AUD 120 000

Program to develop diagnostic skills and resources

(including development of illustrated identification guides, DNA diagnostic protocols, reference collections, training for front-line diagnosticians, development of specialist capabilities; program management – travel for planning, reporting, evaluation, financial management)

\$AUD 664 000

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ACRONYMS

AADCP	ASEAN Australia Development Cooperation Program
ASEAN	Association of South East Asian Nations
ASEANET	South East Asia loop of BioNET International
ASWGC	ASEAN Sectoral Working Group on Crops
AusAID	Australian Agency for International Development
CABI SEA	CAB International South East Asia
CLMV	Cambodia, Lao, Myanmar, Vietnam
GDP	Gross Domestic Product
EWGHPM	Experts Working Group on the Harmonisation of Phytosanitary Measures
IPPC	International Plant Protection Convention
ISPM	International Standard for Phytosanitary Measures
MARDI	Malaysian Agricultural Research and Development Institute
NPPO	National Plant Protection Organisation
NZAID	New Zealand Agency for International Development
PSLP	Public Sector Linkages Program
SOM AMAF	Senior Officials Meeting of ASEAN Ministers on Agriculture and Forestry
SPS	Sanitary and Phytosanitary (WTO Agreement on the Application of Sanitary and Phytosanitary Measures)
SPS CBP	Sanitary and Phytosanitary Capacity Building Program
WTO	World Trade Organization

INTRODUCTION: PURPOSE AND SCOPE

Trading partners crave confidence in each other's systems as well as each other's products. The Network and capacity building proposed here will build confidence in a system that is vital to trade in agricultural commodities. This ASEAN Regional Diagnostic Network (ARDN) will bring assurance that ASEAN member countries can provide each other and other international markets with high quality, reliable and low-risk agricultural commodities. Not surprisingly, the concept of a Regional Diagnostic Network has received repeated, high-level ASEAN endorsement.

Agricultural production, pests, diagnostics and trade

In most of the developing countries of the ASEAN region, the majority of the population is rural or dependent on agriculture. Development of the agriculture sector in these countries is essential to obtain food security, a reduction in poverty and sustainable growth. Even in the most-developed ASEAN countries, agriculture still plays a major role in the national economy and agricultural products invariably feature prominently in national, trade statistics.

Globally, there has been sustained, strong demand for agricultural commodities that are produced in the ASEAN region. This demand has been driven by economic growth, rising incomes and increasing urbanisation in the better-developed ASEAN countries, by expanding markets in China and India, and by the unfilled appetite of high-value markets in the European, North American and Asia-Pacific region. This demand persists despite recent economic downturns. In response, most ASEAN countries have put in place policies to expand production and trade in agricultural commodities, for example in high value and fresh tropical fruits and vegetables. Most ASEAN countries import some grains, fruits, vegetables and wood products. Some countries are considering opportunities to diversify their agriculture to become less dependent on imports.

At present ASEAN agriculture is chronically afflicted by a widespread inability to produce credible lists of the pests and diseases that are present; and by recurrent failures to manage the destructive impact of pests and diseases. An inability to identify agricultural pests and diseases accurately and rapidly lies at the heart of this stubborn malaise. If ASEAN countries are indeed to expand production and trade in agricultural products, this critical weakness must be overcome.

Scientifically accurate diagnosis of pests and diseases makes it possible to produce reliable pest and disease lists. In the current global trading environment for agricultural and forest commodities, defined as it is by the World Trade Organization (WTO) and the Sanitary and Phytosanitary (SPS) Agreement, credible pest and disease lists are essential – they are required at the very beginning of the process of gaining access to high-value, quarantine-sensitive markets and, increasingly, are required to protect long-established trade. In addition, on-going pest and disease monitoring is commonly a condition of market access. This monitoring depends on sound, efficient diagnostic support. Pest lists are also essential for the development of appropriate national and regional quarantine measures. As noted above, most ASEAN countries are also importers of agricultural and timber-based commodities and some

are transit ways for commodities traded within ASEAN or with the rest of the world. Whatever the circumstance, ASEAN countries require capacity to identify and manage quarantine risk associated with these commodities and accurate diagnosis of pests and diseases is essential if this is to be done. Competent identifications also enable access to the information required to control the damage inflicted by pests and diseases. Limiting this damage is essential if the quantity and quality of product agreed to in the market place is to be delivered. Effective emergency response to outbreaks of suspected new pests or diseases depends absolutely on early detection and rapid, accurate diagnosis.

In reality, many pests and diseases are already common to many ASEAN countries. If this can be properly documented and only the necessary phytosanitary risk mitigation measures put in place, there should be ample scope for relatively unhindered trade in agricultural commodities. This would be a major contribution to the economic integration envisaged under the ASEAN Charter. However, if reliable pest and disease data remains lacking or risk mitigation is inappropriately applied, there are dangers of overly restrictive and costly border practices and real threats to new and existing trade.

By supporting the preparation of market access applications, plant health monitoring and the development of rational quarantine policies and operations, the proposed Network will provide scientific assurance to trade in agricultural commodities under the ASEAN Australia New Zealand Free Trade Agreement (AANZFTA). It will also remove impediments to realising gains under existing or anticipated, bilateral, free trade agreements, such as those involving Australia, Thailand, Indonesia and China.

Goal of Proposed Diagnostic Network and Capacity Building

The ASEAN Regional Diagnostic Network is visualised as a system that:

- provides accurate, timely identifications of organisms associated with economically important plants – specifically pests, diseases and weeds;
- is accessible to all potential users in the ASEAN region;
- offers a mechanism both for sharing existing diagnostic expertise and for enhancing this expertise at national and regional levels;
- supports production, regulatory and compliance systems; and
- is sustainable following phased withdrawal of international, donor support.

The proximate beneficiaries of the network are the national institutions and bodies responsible for agricultural research, development and extension, negotiating market access, developing and implementing quarantine, and the universities. The ultimate beneficiaries include the producers and exporters of agricultural and forest commodities.

Scope of Diagnostic Network

The Network, at least initially, will encompass:

- the agriculture, domestic horticulture, forestry and amenity sectors; and

- ‘pests’ in the broad sense, i.e. arthropods, molluscs, nematodes, plant pathogens and weeds (including weed seeds), pre- and post-harvest, established and exotic.

For the present, the Network will not attempt to cover all biodiversity and will have limited capacity to deal with beneficial organisms encountered in agricultural and forest systems.

Principles

The principles underlying the Network are that it will:

1. work to provide benefit to all ASEAN countries;
2. facilitate economic integration, consistent with the ASEAN ‘Blueprint’ and other strategic initiatives;
3. reduce the ‘development gap’ within ASEAN;
4. optimise ‘within-region’ collaboration and assistance (e.g. through entraining existing expertise in more developed ASEAN countries);
5. be developed in collaboration with ASEAN dialogue and development partners;
6. utilise existing resources as far as possible;
7. be based on techniques and protocols appropriate to the ASEAN region;
8. be a cohesive but geographically distributed system;
9. facilitate the transfer of knowledge (techniques, understanding) from researchers to front-line identifiers;
10. assist individuals and laboratories within the Network to be more effective in seeking funding to address specific, diagnostic problems;
11. provide a service but also build national capacity (especially in laboratories, tools, skills);
12. contribute to developing regional information resources (e.g. through the sharing of pest lists);
13. have a long-term focus;
14. feature a high degree of regional responsibility, leadership and management (notably through regional management of the Clearing House);
15. facilitate the coordination of capacity building and development; and
16. be cost effective.

ASEAN endorsement

The concept of an ASEAN diagnostic network has been endorsed repeatedly by the ASEAN Experts Working Group on the Harmonisation of Phytosanitary Measures and the ASEAN Sectoral Working Group on Crops (first in Bali, Indonesia in 2005, then in Langkawai, Malaysia in 2007 (Agenda item 5.1) and in Nay Pyi Daw, Myanmar in 2008, Agenda Item 5.4.1). These meetings recommended pilot activities, in particular the development of a list of regional resources (expertise, laboratories), establishing ‘proof of principle’ and that the managers of the SPS CBP and NZAID Phytosanitary Capacity Building Program in the Mekong and ASEANET actively seek funding to implement the concept.

NEEDS ANALYSIS

Obtaining identifications in the ASEAN region

As noted in the Introduction, accurate, scientifically-based diagnostic capacity is essential to the management of pests, diseases and weeds in agricultural, horticultural and forest systems. It is also essential for developing and maintaining access to international markets, and for a host of domestic, regulatory and compliance systems. Currently no ASEAN country is self-sufficient in diagnostic capacity. Furthermore, there is no regionally-accepted or coordinated way of obtaining or verifying diagnoses. Identifications are obtained in a largely *ad hoc* fashion, variously making use of professional, institutional and personal connections. Some diagnostic laboratories and specialists are well known within their own country but not beyond. Some workers are well aware of where expertise can be found and some have little idea. Few diagnostic laboratories or experts have any kind of certification. Some ASEAN countries can call upon impressive diagnostic capacity. For example, Thailand, Malaysia and Indonesia all have strong, diagnostic expertise across many groups of arthropods and plant diseases. However, this expertise is dispersed across Departments of Agriculture, Forestry and Horticulture, universities and other research organisations, and does not cover all groups of agricultural importance. The expertise is not well networked and is little known to scientists and regulators in other countries.

Some use is made of global services, such as the CABI-sponsored *Global Plant Clinic* (<http://www.globalplantclinic.org/>) and the well-utilised List server *PestNet* (<http://www.pestnet.org/>). Neither has the major, capacity building goal that is central to the ARDN concept. *PestNet* is based on images rather than the examination of actual specimens and there is no certainty that identifications will be accurate or even forthcoming. Although well publicised throughout the ASEAN region, *PestNet* has only modest ASEAN patronage. *PestNet* places all requests for assistance in the public arena and for a variety of reasons this may not be acceptable to plant health workers based in the ASEAN region.

It is not only the agriculture and forestry sectors that require diagnostic services. All ASEAN countries have reporting obligations under the *Convention on Biodiversity*, not to mention responsibilities to document their flora and fauna and report on invasive species. There is no regional resource to service this need. Certainly, there are many botanists, mycologists, nematologists, entomologists, acarologists, etc. who are pursuing taxonomic work on South East Asian taxa and who could assist with the identification of pests and diseases, but there is no register of these activities or these individuals.

There is no compilation of the diagnostic tools and protocols that would be applicable to South East Asian agricultural and forest pests and diseases and no comprehensive, modern textbook covering the region. Front-line identifiers, especially in the least-developed countries, are hard pressed to locate diagnostic tools that are relevant to their needs or even determine whether the required tool exists.

van der Meer and Ignacio (2008) have identified two outstanding ASEAN, regional priorities:

1. The preparation of ... pest lists and lists of products, by risk level, for border control measures ...;
2. Assessment of national and regional laboratories and other diagnostic facilities in order to establish appropriate networks of laboratories, diagnostic facilities and experts ...

There have been few compilations of regional expertise or laboratory capacity. Evans *et al.* (2002) and Naumann and Jusoh (2002) conducted needs assessments in relation to plant disease and pest diagnostics respectively, and summarised capabilities and resources on a country basis. These assessments recommended training in diagnostic skills, enhancement of laboratory facilities, improved governance and management for reference collections, enhanced networking, and that regional institutions with capacity to provide identifications continued to waive fee-for-service charges for this service. Taxonomic expertise in Indonesia was documented in the 1990s but this information is not in the public domain and requires updating.

A Case Study: Harmonising phytosanitary measures across the ASEAN region

Prior to 2004 the ASEAN Experts Working Group on the Harmonisation of Phytosanitary Measures (EWGHPM) commenced work to 'harmonise' phytosanitary measures covering ten commodities. The number of commodities was subsequently reduced to five. The process consists of (a) countries submitting pest lists for each of the commodities; (b) a risk analysis based on this data; and (c) agreement through the EWGHPM on the phytosanitary measures proposed. At the 2009 EWGHPM meeting the task remained incomplete. The process has been crippled by the inability of countries to provide pest lists, principally because of the inability to perform surveillance and diagnostics and the lack of confidence to share whatever existing pest lists that may have been compiled.

Quantifying the need

The experience of the Malaysian Department of Agriculture (Wan Normah, unpublished) is that about 30% of identifications required cannot be taken to species level. This is consistent with data from a recent, ASEAN-wide survey of pest and diseases in mangoes (unpublished data, AADCP) and from a Vietnamese forest health survey (unpublished data, Vietnam CARD Program). Both of these studies also estimated that about 30% of species detected could not be identified readily from existing, published sources.

The number of identifications performed in the ASEAN region each year is unknown and the number of specimens that might be submitted to an ASEAN Diagnostic Network is very difficult to gauge. At a recent, strategic planning workshop for the proposed Network (in Vientiane, Lao PDR, May 2009) *low estimates* suggested that fewer than 1000 specimens would be submitted (based on assumptions of 10 to 50 samples per year from smaller ASEAN countries and smaller numbers from larger countries with better developed domestic capabilities) and *high estimates* ran to a total of 5,000 – 6,000 specimens per year, especially if legacy material (i.e. specimens already in collections) were submitted to the Network. Data on numbers of fungal

identifications performed by the Imperial Mycological Institute (available from <http://194.203.77.76/herbIMI/Index.htm>) and *PestNet* suggest that the lower estimates are nearer to the mark.

It is easier to estimate the likely taxonomic diversity of submissions to the proposed Network. Participants in the Vientiane workshop compared the taxonomic profile of pests and diseases in the ASEAN region (as given in recent compilations) with data on enquiries to *PestNet* and experiences in their own organisations. It was estimated that between 50% and 60% of specimens submitted would be arthropods (with mites increasing in numbers) and some 20 – 30% of submissions would be of fungi. Bacteria, viruses, phytoplasmas, nematodes and weeds would make up the remainder. It was also suggested that while larger countries might forward smaller numbers of specimens to the Network, these were likely to include a larger percentage of ‘difficult’ identifications.

Importantly, there is consensus that significant numbers of plant disease samples would be submitted to the Network, creating quarantine difficulties as samples reach international borders.

Assessment of training needs

The 2009 Vientiane Network planning workshop also made the following recommendations regarding diagnostic training and tools:

- Training is required in skills for general (‘front-line’) diagnostics. Some training should address a broad range of pest and disease groups and some should target and specific, important taxa. More illustrated guides, including *Lucid* keys are required, both on CD and web-based, for front-line users.
- An ASEAN version of the *PaDIL* website (<http://www.padil.gov.au/>) should be considered.
- Training in the use of molecular protocols, ‘rapid’ diagnostics, immature insects, bacteria, viruses and nematodes are high priorities for front-line identifiers. Tools and protocols to permit this are required.
- Training in ‘basic taxonomy’ is also required for front-line diagnosticians.
- Varying English language skills should be taken into account in delivering training.
- In-country training is most useful for front-line diagnosticians, especially when initial workshops are followed by mentoring or when training is delivered via a series of workshops.
- Training in larger institutions, which gives trainees access to diverse skills and resources is beneficial.
- Development of specialist diagnostic skills is also a priority.
- Projects to develop DNA libraries (e.g. barcoding) for some groups should be encouraged, e.g. tephritid fruit flies, viruses.
- Training and the development of diagnostic tools should attempt to accommodate needs for both taxon- and crop-based training. Pests and diseases of export crops are a particular priority.

Diagnostic services: a public good or private sector responsibility?

The Network is required because the marketplace also has failed to deliver the required service. Quite simply, it is not commercially viable for the private sector to provide a service that is:

- required over a very long-term but has episodic actual demand,
- encompasses enormous geographical, taxonomic and commodity breadth,
- requires complex, scientific infrastructure, and
- requires absolute accuracy.

Most developed countries have accepted that the provision of agricultural diagnostic services is a necessary and inescapable 'public good'. For example, in considering whether it is appropriate to direct public resources to an agricultural diagnostic service, Sheldrake (2003) suggested that we apply the test of whether the benefits of donor or government investment flow to the community as a whole, rather than to a narrow sector or range of individuals. It can be argued that the failure to identify correctly a pest or disease can have adverse impact well beyond just one farmer or one business, and thus it is appropriate to direct public monies towards a pest and disease diagnostic service. This does not mean that industry cannot be required to make financial contributions to ensure that a network or service is viable.

Evidence from NSW Agriculture (Sheldrake, 2003) suggests that a plant pest diagnostics laboratory is not commercially viable and will always require funding from the Government. Overall, the cost of the NSW Agriculture diagnostic service amounted to approximately \$AUD 4 million per annum. Fee-for-service recouped only \$AUD 2.2 million. Veterinary disease diagnostics made up 84% of the financial turnover and less than 5% of diagnostic fees were earned from the plant diagnostics service. The harsh reality is that to provide a diagnostic service for agriculture, it is necessary to maintain high staffing levels of highly trained specialists, who are of necessity more numerous and more costly than is the case in commercial diagnostic laboratories, which tend to perform large numbers of relatively routine procedures.

It is important to note that fees can be a strong disincentive for submission of specimens and samples, which in turn promotes a misleading or incomplete picture of plant health status.

REGIONAL AND GLOBAL DEVELOPMENTS

Global trading environment

The importance of pest lists based on reliable diagnostics to international trade has been noted in the Introduction. This importance flows directly from the SPS Agreement, the International Plant Protection Convention and its standards, and from the WTO. Mention was also made of obligations that flow from the *Convention on Biodiversity*.

Trends in pest and disease diagnostics

Plant pest and disease diagnostics is based on a variety of long-established and emerging diagnostic tools and techniques:

- Visual assessment of symptoms
- Morphology
- Isolation and culturing – which can take days or weeks
- Light microscopy
- Remote microscopy
- Electron microscopy
- Pathogenicity testing
- Serology
- Molecular, including ‘barcoding’, microarrays, PCR, real-time PCR; note the unreliability of some sequences on GenBank
- Rapid and mobile diagnostic systems
- Electronic biosensor devices.

These techniques provide increasing discriminatory power and new insights into relationships among species. Revisions to many species concepts and higher classifications are likely to continue for the foreseeable future. These changes create challenges for scientists and regulators in developing countries. In addition, some new technologies provide extraordinary sensitivity so that many pathogens can now be detected at sub-clinical levels, which in nature are statistically unlikely to lead to the infection of other plants and thus unlikely to create disease outbreaks. In some circumstances highly sensitive assays can detect non-viable pathogens. This sensitivity and the need to validate diagnostic tools pose challenges for agencies everywhere, not just in developing countries. The proposed Network provides a means by which these challenges could be addressed on a regional basis.

Global information management initiatives

Through modern developments in information management and in particular the networking of databases associated with collections in developed countries, there is improved access to reference collections and pest and disease records held in these collections. Increasingly, old, inaccurate records in collections located outside the ASEAN region will be made generally available. Addressing these records will be a challenge for ASEAN countries with limited access to specialist, diagnostic skills.

Diagnostic networks

Perhaps the best-developed, multi-institutional, diagnostic network is that established over the past decade in the USA. This system is especially designed to detect ‘unusual’ or emerging pests, high consequence pests, chemically resistant pests, and extensions to host, ecological or geographical ranges; and to serve the Federal regulatory agency. In general, the system makes use of regional centres to make initial diagnoses and calls upon experts largely for confirmations. The Network includes farm advisers, county agents and extension plant pathologists; diagnostic clinics at some universities; state agriculture departments; individual expert scientists at

universities; industry (i.e. specialist diagnostic laboratories); and Federal scientists in the USDA (APHIS and the Agricultural Research Service). It is supported by an architecture of websites, agreements and protocols, and a program of training, intelligence gathering and the development of tools.

Australia is in the process of developing its own diagnostic network, especially with the goal of diagnosing exotic pests and diseases. This nascent network is based on an array of accredited laboratories and geographically distributed expertise. Development and validation of new diagnostic tools and programs to enhance diagnostic skills are integral to the development of the Australian network. Laboratory accreditation is a priority in Australia and some other countries but is costly, time consuming and impractical for most laboratories and experts in the ASEAN region. There are obvious opportunities to link with expertise in the ASEAN region. For example, many of the pests and diseases that are of quarantine concern to Australia are endemic to the South-East Asian region and familiar to taxonomists based there.

In the South-East Asian region, ASEANET (<http://www.aseanet.org/>) has the goal of furthering the development of taxonomic capacity in general, and there are a few specialist initiatives, such as the International Centre for the Management of Pest Fruit Flies, which has the potential to network expertise in tephritid diagnostics.

ASEAN Economic Integration

ASEAN economic integration provides a strong incentive to ‘harmonise’ phytosanitary measures and liberalise trade within the ASEAN region. This requires a sound understanding of pest status and ongoing capability to monitor pest status and perform targeted border inspections.

Recent capacity building relevant to diagnostics

A significant amount of diagnostics-related assistance has been directed towards ASEAN countries in recent years, mostly as part of SPS-related projects and programs. This assistance has favoured the development of technical skills, with much smaller resources going to laboratory equipment, consumables, technical literature, computer hardware and specialist software. Assistance has not emphasised the establishment of a durable regional mechanism and has left behind few new diagnostic tools. Benefits have largely accrued to Government agencies with direct SPS responsibilities; universities and other government agencies have benefited to a smaller extent. There is a need to ‘capture’ diagnostic information developed during some of these projects before it is lost and to capitalise on skills developed during these programs.

The AusAID-funded AADCP Plant Health Project supported training in plant health surveillance skills across the entire ASEAN region and included a series of workshops on the diagnostics of selected arthropod and plant diseases.

The NZAID Phytosanitary Programs have focused on the CLMV countries. The second phase has supported a series of surveillance and diagnostics training activities to develop and maintain specimen-based pest lists in each country. This program has also provided equipment to National Plant Protection Organisation (NPPO) laboratories to support the diagnosis and housing of these specimens.

The SPS CBP has encompassed all ASEAN members and complemented the AADCP surveillance activities with training in collection development, diagnostics, information management and risk analysis.

Since the mid-1990s, AusAID has supported a series of short-term activities in Thailand, Indonesia, Vietnam and the Philippines, again emphasising the enhancement of skills in surveillance, diagnostics, information management, risk analysis, risk management and SPS awareness. Most have emphasised the importance of reference collections and several activities have paid particular attention to national, strategic planning. These activities have been supported under various AusAID facilities, including the Government Sector Linkages Program, the Public Sector Linkages Program (PSLP), the Cooperation for Agricultural and Rural Development (CARD) and the APEC Support Program.

In addition, ACIAR has supported several projects with a significant taxonomic/diagnostic component, such as fruit fly management projects in Thailand, Vietnam and Indonesia, and disease diagnostics projects.

FUNDING

Minimally, funds are required to set up and maintain the Clearing House, i.e. to cover the costs of staffing a modest facility; handling, consigning and tracking specimens; communication; monitoring performance and reporting. However, the sustainability of the Network and the development of national capabilities will depend on at least five years of funding for training, development of tools and adoption of new technologies, and to provide incentives to experts to provide services to the Network.

The Network would operate on a not-for-profit basis. However, opportunities for contract work may arise from Network operations.

Funding models available include:

- Donor support, reducing over time.
- A system in which countries receive ‘credits’ for providing diagnostic services and redeem these credits for services. This system suits the situation where countries have diagnostic expertise in some areas but not in others.
- Fee-for-service. Revenue for this ‘user pays’ system could include service contracts with the private sector.
- Funding through a portfolio of collaborative projects with researchers and networks outside the ASEAN region.
- Income from a series of ‘retainer’ contracts with ASEAN NPPOs or other ASEAN organisations.

Experience suggests that a funding model based on contributions from ASEAN member countries based on GDP is unlikely to be successful.

It is recognised that some investment in resources will need to be made to ensure the least-developed countries (Cambodia, Lao PDR, Myanmar and Vietnam) participate as fully as possible in the Network and derive reasonable benefit. Currently, the least-developed countries are less likely to have experts contributing under a ‘credit’-based system or to have resources available to pay for identifications under a ‘fee-for-service’ model.

Some experts will provide specialist services voluntarily, as part of their professional duties. Others will welcome the opportunity to examine samples that will assist them in their own research. Many, however, will require additional incentives to provide their time and expertise.

A suggested resourcing scenario is as follows:

Short term (years 1 – 5): Donor funding, with in-kind ASEAN contributions.

Medium term (years 6 – 10): Minor donor funding, ASEAN governments, private sector, fee-for-service.

Long term (years 11 and beyond): Minor funding from ASEAN Government agencies, decreasing need for major funding as national capacity increases, fewer specimens submitted to Network, and regional experts provide services *gratis*.

Well-constructed strategic and operational plans should facilitate multi-donor funding.

IMPLEMENTATION DESIGN

As noted in the Introduction, the goal of the ASEAN Regional Diagnostic Network (ARDN) is to develop a system that:

1. provides accurate, timely and confidential diagnoses of organisms of agricultural importance, especially plant pests, diseases and weeds;
2. is accessible to all potential users in the ASEAN region;
3. makes use of a directory of diagnostic experts and laboratories with capabilities relevant to the ASEAN region;
4. offers a mechanism for sharing diagnostic expertise;
5. provides a framework for enhancement of **both** national and regional diagnostic capacity, by developing diagnostic skills and tools in the ASEAN region;
6. supports regulatory and compliance systems, as well as production agriculture; and
7. is sustainable following phased withdrawal of international, donor support.

The form and mode of operation of the proposed system is described below.

Description of the proposed ASEAN Regional Diagnostic Network

It is anticipated that the ARDN (Figure 1) would accept requests for diagnostic assistance from individuals and organisations from all ASEAN countries. Requests would come from a variety of ‘clients’: agricultural scientists, researchers, regulatory authorities, the private sector and members of the general public. Some countries may prefer to channel requests from all clients through their National Plant Protection Organisation (NPPO). The capabilities and operation of the system would be publicised widely, for example, through ASEAN mechanisms, existing biodiversity and specialist networks, NPPOs and university networks. An important task during the Network’s first year of operation would be the development of a targeted, realistic, publicity campaign (see Objective 2, below).

It is envisaged that the Network’s first year of operation would be a pilot program, initially limited to a small number of ASEAN countries. This would allow the development of a list of regional resources (e.g. expertise register) and Clearing House protocols and procedures. This proof-of-concept operation would also provide data on usage and feasibility.

Figure 2 depicts the proposed mode of operation of ARDN. Objective 1 (below) develops the infrastructure to support this mode of operation. Clients would forward unknown samples via post or courier to a Clearing House, to be established in Serdang, Malaysia. The Clearing House would be managed and staffed by the non-government organisation, ASEANET and would be located within the regional laboratories of the agricultural research agency, CAB International. The Clearing House would be subject to Malaysian laws and regulations, but would be independent of the Malaysian Government.

The Clearing House would have a very small number of staff. Their role would be to make an initial identification, enter data associated with the sample into a tracking system, remove and set aside locality data from sample labels, and forward the sample to an expert diagnostician for identification. In due course, sample and identification would be returned to the Clearing House, reunited with locality data, and returned to the client (Figure 3). The Clearing House provides two kinds of confidentiality. Firstly, the diagnosis remains confidential until the client elects to publish the record (and they may be obliged to do so promptly as parties to the International Plant Protection Convention). Secondly, the identity of diagnosticians, who may wish to limit demands on their own resources, can be kept confidential or at least protected from the general public.

It is envisaged that diagnostic expertise would be provided by specialists in the ASEAN and nearby region. International diagnostic standards and best practice will be adopted where these are available and appropriate. Inevitably there will be expertise gaps, which the Network will address during the initial years of operation. Gaps in scientific knowledge will also limit the service. The Network provides a means to address these gaps in knowledge based on real needs. The system will complement existing, web-based diagnostic services and tools, such as PestNet (<http://www.pestnet.org/>) and PaDIL (<http://www.padil.gov.au/>). Progressively, the Network will adopt emerging technologies, such as remote microscopy and DNA-diagnostics. Objective 3 (see below) addresses gaps in specialist and frontline skills, knowledge gaps and laboratory capabilities, and the need to take advantage of new technologies.

The Clearing House would be managed and led by an experienced scientist-manager (or Director) supported by a small number of technical staff, laboratory manager and administrative support. Initially, the Clearing House will be hosted in existing, renovated laboratory space. It will require facilities for basic light microscopy, laboratory consumables, computing facilities and internet, and postal facilities. Consideration will be given to the level of phytosanitary (quarantine) security that should be maintained. The Clearing House will report to an Advisory Committee, comprising senior representatives of ASEAN member countries and other stakeholders. The Advisory Committee would report in a manner to be determined, most likely to the ASEAN Sectoral Working Group on Crops. In the first year of operation of the Network it would be desirable to secure endorsement of the Network by ASEAN's SOM AMAF. The Advisory Committee would provide technical and strategic oversight of the Network and include members with the capacity to influence external funding.

It is anticipated that the Network will 'drive' several positive developments at the national level. For example, if requests are channelled initially through the NPPO or some other national node, it is likely that this will stimulate the development of increased diagnostic expertise at that node. Also, since submissions to the Network will require digitising of collection data, identifications will be received in digital form, and countries may be obliged to report on detections, the process is likely to stimulate acquisition of primary data into national information systems.

Goal-level performance indicators for ASEAN Regional Diagnostic Network:

- Extent to which the Network drives national capacity building (e.g. as indicated by development of pest lists acceptable to trading partners, acceptance of regulatory decisions based on diagnostics, availability of diagnostic tools, completeness of coverage of pest taxa).
- User satisfaction (e.g. extent to which the Network is used by ASEAN organisations).
- Long-term funding model established.

Relationship amongst Objectives and Outputs

In summary, Outputs 1.1 – 1.5 create and maintain the hard and soft infrastructure that supports the day-to-day and year-to-year functioning of the Network.

Outputs 2.1 – 2.3 provide users, potential users and other stakeholders with information about the Network and creates conduits by which stakeholders can provide feedback on how well the Network is meeting needs and where future priorities lie.

Outputs 3.1 – 3.5 buttress both the Network and the long-term sustainability of diagnostic capacity. Output 3.1 addresses knowledge gaps, Output 3.2 supports the development of national capacity, Output 3.3 looks to facilitate the realistic adoption of new technologies, Output 3.4 addresses long-term training needs, and Output 3.5 provides incentives to experts to support the Network.

It is proposed that Outputs 1.1 – 1.5 and Outputs 2.1 – 2.3 would be managed by ASEANET and Outputs 3.1 – 3.5 would be managed by the Australian Government Department of Agriculture Fisheries and Forestry in consultation with the Clearing House and the Advisory Committee.

OBJECTIVE 1. ESTABLISH AND MANAGE NETWORK

Objective-level performance indicators:

- Specimens forwarded ‘successfully’ via Network to diagnostic specialists (e.g. as indicated by timeliness, specimens properly prepared and consigned).
- Identifications ‘successfully’ provided to clients (e.g. as indicated by level of identification, timeliness).
- Taxonomic and crop coverage of expertise register.
- User satisfaction with service.

Output 1.1. Establish Clearing House

This Output establishes the central, operational facility of the Network, within the laboratories and offices of CABI SEA, on the MARDI campus at Serdang, Malaysia. The facility would be neither large nor complex. The initial focus will be on establishing functionality within pre-existing premises. Facilities, resources and staff

skills should be sufficient to perform routine identifications and ‘preliminary’ identification of unknowns, e.g. to order or family level in insects. Tasks will include:

- Establishing essential laboratory facilities, including secure premises, benches, microscopes, computers, internet access, packing and mailing facilities, temporary storage space.
- Creating an in-house, information management system for sample registration and tracking.
- Developing in-house management systems for work flow, day-to-day financial management etc.
- Recruiting or assigning staff.
- Negotiating quarantine arrangements with the host country (Malaysia), including consideration of modest, post-entry quarantine facilities.
- Establishing a remote microscopy node.

Output 1.2. Develop and maintain expertise register

An expertise register, a database of individual experts and diagnostic laboratories available to the Network, will be a critical resource. It is envisaged that the register would include the names, contact details and particulars of expertise. It would be compiled during the first year of the Network’s existence and subject to more or less continuous updating and expansion. Initial tasks towards compiling the register will include:

- Drafting standards for the database, including criteria for including individuals or laboratories (e.g. laboratories with ‘recognised expertise’, ISPM 27 compliant, ISO certification, authors of research publications, etc).
- Designing the database.
- Populating the database (e.g. via questionnaires, site visits). It has been agreed that expertise can come from anywhere in the world but that ASEAN expertise should be co-opted and utilised first.
- Canvassing as widely as possible to establish who or which laboratories have provided diagnostic assistance in recent times.
- Progressively incorporating specialist sub-networks (e.g. specialists on fruit flies, thrips, HLB) and existing compilations (e.g. Indonesian list of taxonomic expertise).
- Consultation with professional societies and organisations.
- Verification of database records (to confirm skills, willingness to provide services etc).
- Obtaining endorsement from NPPOs of experts and laboratories to be included in the register. This immediately establishes a *de facto* national, diagnostic network in each country.

Output 1.3. Develop network protocols

This Output complements Outputs 1.2 and 1.3 and provides operating procedures for both the Clearing House and the participants in the Network (clients, diagnosticians). Priority tasks will include:

- Documenting the regulatory requirements regarding movement of specimens and samples in and out of each ASEAN country. This recognises that specimens may be subject to regulations relating to quarantine, CITES, national heritage, or the movement of ‘cultural’ objects.
- Development of a submission protocol (including definition of the role of the NPPO). Some countries may prefer a central role for the NPPO; other countries may prefer a more diffuse system, in which case a protocol will be necessary to ensure that the NPPO is aware of the results of identifications. It is likely that the submission protocol will involve an electronic, web-based pro-forma and will call for standard collecting data, explanation of the purpose for which identification is required and perceived urgency.
- Development of a protocol for handling specimens and samples in the Clearing House.
- Development of a protocol for the tasks performed by specialist and confirmatory diagnosticians (e.g. prescribing timeliness, retention of specimens).
- Development of a protocol for receiving and reporting diagnoses (e.g. including notifications to NPPOs).
- Development of a mechanism for obtaining data on Network performance.
- Development of a set of alternatives for submitting plant disease diagnoses to the Network (e.g. dried herbarium specimens, slide mounts, DNA extracts, digital images).

Output 1.4. Conduct strategic management and annual planning

On-going activities under this Output will include:

- Developing and maintaining a Strategic Plan.
- Developing annual Operational Plans, including a Business Plan for the Clearing House.
- Establishing any essential MoUs or other formal agreements; negotiating quarantine arrangements.
- Drafting terms of reference for the Advisory Committee (or the Interim Technical Committee).
- Obtaining Advisory Committee input to Strategic and Operational Plans and reports.
- Reporting annually to EWGHPM, ASWGC, SOM AMAF. In the first year of the Network it will be especially important to obtain high-level recognition of Network activities.

Output 1.5. Manage distribution of specimens for identification

This is the routine work of the Clearing House. Recurring tasks will include:

- Day-to-day management.
- Collecting/monitoring data (e.g. numbers and diversity of samples, origin, timeliness, user feedback).

OBJECTIVE 2. COMMUNICATE GOALS, CAPABILITIES AND MODE OF ACTION OF NETWORK

This cluster of Outputs provides information to Network stakeholders and obtains information from them on performance and priorities.

Objective-level performance indicators:

- Awareness among users of scope and protocols of the Network.
- Number and diversity of clients and expert diagnosticians associated with the Network.

Output 2.1. Development of promotional material

Promotional and awareness material will be required by the Clearing House, NPPOs and others in key positions. Promotional material could include:

- a colour brochure ('flier'), a 'fridge magnet, pens, stickers, posters or a T-shirt; and
- a standard presentation.

Output 2.2. Development of website

A website will be an important means of making information about the Network available. Initially the website should include:

- A description of the goal, scope, principles, governance and history of the Network;
- Protocols for submission and handling of samples; and
- Links to closely related websites (e.g. *PestNet*).

Initially, the website would not include a large number of links or diagnostic resources. However, additional content may be added in subsequent years. The website could incorporate an electronic application ('e-application') for diagnostic services. Users could access the Network through a 'portal' and submit their application online to be followed by the actual samples. Users could also access their 'results' online. As Singapore and Malaysia are already developing network websites, it may be easier and simpler to add the ARDN website to networks already in existence in the ASEAN region. It is also possible that the website could be used to

support activities envisaged under Objective 3 (e.g. training material could be placed on the website).

Output 2.3. Active promotion

During the first year of the Network's operation it will be a high priority to develop a plan for promotional and awareness activities. Such a plan might incorporate:

- Targeted presentations, e.g. to NPPOs, other government agencies, professional societies, private sector organisations, universities, conferences.
- Opportunities to promote the Network through professional societies, their journals and newsletters.
- Promotion of the Network within the private sector.
- Collaboration with other services, such as *PestNet*.
- Taking advantage of organisations such as BioNET International and Invasive species networks.
- Making use of avenues for spreading information within government organisations.
- Making use of individuals who can communicate accurately and persuasively to colleagues.
- Targeted distribution of promotional materials, e.g. through NPPOs.
- Formal reporting to ASEAN Sectoral Working Group on Crops and SOM AMAF.

OBJECTIVE 3. ENHANCEMENT OF DIAGNOSTIC TOOLS AND SKILLS

This cluster of Outputs is essential to the mid- and long-term viability of the Network. Collectively, the Outputs:

- (1) Improve the range and usefulness of diagnostic tools available to front-line and specialist identifiers, either by refinement of pre-existing diagnostic tools or the development of new tools relevant to the ASEAN region.
- (2) Progressively strengthen national diagnostic networks, so that fewer and fewer 'routine' identifications need go the Clearing House.
- (3) Facilitate the adoption of new technologies.
- (4) Progressively enhance the skills of front-line and specialist identifiers.
- (5) Provide incentives to specialists to continue to provide services to the Network.

Some Outputs under Objective 3 (e.g. the development of improved diagnostic tools) could advantageously be combined with targeted, in-country, surveillance activities designed to develop pest lists.

Objective-level performance indicators:

- Gaps in diagnostic skills and tools addressed.
- National networks enhanced (e.g. samples handled in-country, incorporation of diagnostic training in university curricula, national collections enhanced).
- Enhanced collaboration among regional experts (e.g. as indicated by collaborative development of tools, research reports, publications).
- Training responsibilities increasingly assumed by local staff.

Output 3.1. Develop and enhance diagnostic tools

This Output will develop or update a range of identification tools relevant to the ASEAN region. Priorities will be developed annually through consideration of data generated by Network operations, and from recommendations from the Advisory Committee, NPPOs and taxonomic specialists. Tools would be peer reviewed, validated and made available or distributed through normal print and electronic publication avenues, on CDs or via the Network's website. These tools would include:

- front-line tools (e.g. *Lucid* guides, 'PaDIL-like' guides, rapid identification kits, manuals); and
- specialist tools (e.g. more complex *Lucid* guides, taxonomic keys, molecular protocols).

Output 3.2. Develop diagnostic resources of national nodes

This cluster of activities would support greater, national self-reliance in diagnostics. The Output would:

- Progressively curate and update key reference collections – as diagnostic resources for both front-line and specialist identifiers
- Provide minor equipment and literature to support front-line and specialist identifiers
- Coordinate collection and distribution of reliably identified specimens and samples to key diagnostic laboratories.

Output 3.3. Coordinate adoption of emerging technologies

This Output is closely related to Output 3.2. It would facilitate the uptake of new technologies and methodologies in a cost-effective and sequenced fashion that is appropriate to the ASEAN region and its needs. It is likely that the Output would encompass:

- Deployment of remote microscopy capabilities;
- Coordinating systematic collection and sequencing of DNA samples, including material for 'barcoding' projects; and
- Assisting the establishment or better utilisation of DNA laboratories.
- Assisting ASEAN countries to adopt technologies deemed 'standard protocols' under ISPM No. 27: *Diagnostic protocols for regulated pests* as they are adopted by the IPPC's Commission on Phytosanitary Measures.

Output 3.4. Enhance development of skills

This is one of the most important elements of the program. It would comprise a mixture of in-country and multi-country training activities, in the form of workshops, attachments and mentored project work. Some training would be provided by ASEAN specialists and other training by experts from outside the region. Training for front-line diagnosticians (in identification, DNA extraction, etc) would largely take place in-country in the form of a sequence of workshops and mentoring activities. From year to year, trained individuals would assume greater responsibility for local training. It is envisaged that at least some of the training would take place in larger institutions where diverse resources and a wide range of expertise are available. Some activities might take place in association with activities under Output 3.1 (e.g. training in the use of new diagnostic tools) or activities under Output 3.3. It will be important to seek opportunities to incorporate material developed for the training for front-line diagnostician progressively into tertiary-level courses (degrees, diplomas) offered within the ASEAN region. This provides a means of sustaining training beyond the availability of donor funding. Activities under Output 3.4 could include:

- Training for front-line identifiers (including use of electronic tools, e.g. *Lucid* keys);
- Training in specimen preparation techniques (e.g. pinning, slide making, preparation of plant disease herbarium specimens);
- Training in DNA-extraction protocols;
- Development of specialist skills (e.g. through collaborative projects, attachments, exchange visits, joint field work, small-scale workshops);
- Development of durable training and reference resources, especially to enhance university curricula;
- Identification of individuals for post-graduate training in taxonomy (although providing scholarships would be outside the scope of the Network);
- Use of remote microscopy technologies for training.

Output 3.5. Support for regional specialists

The development opportunities listed under Output 3.4 will provide some incentives to specialists to provide services to the Network. In addition, many specialists would welcome material that assists them in their work. However, it is recognised that additional, cost-effective incentives may also be required. Fee-for-service may be considered but it is preferred that support be delivered more constructively, for example in the form of funds for:

- travel in connection with the development of diagnostic resources;
- meetings of expert, micro-networks;
- laboratory support;
- access to facilities; or
- small, diagnostic projects.

It is also incumbent on the Network to provide appropriate recognition of services to the Network and to ensure that employers of specialists also acknowledge these contributions.

RISK MANAGEMENT PLAN

Table 1 identifies major risks to the Network concept and operation and provides a basis for elaborating a more comprehensive Risk Management Plan.

Table 1. Risks, ratings and suggested management options.

Threat	How likely is this to happen?	What would be the impact?	Unmanaged risk	Risk management measures
Clearing House inoperable for short period	Moderate	Low	Low	Develop back-up communication capacity to advise stakeholders.
Clearing House inoperable for extended period, e.g. through extreme storm damage	Low	High	Moderate	Identify alternate facilities for handling specimens and communication with stakeholders.
Expertise gaps within ASEAN region	High	High	High	Include expertise from outside ASEAN. Include capacity building program.
Experts unwilling to provide services	Moderate	High	High	Provide incentives through assistance to research, equipment, access to literature, samples, increase fee-for-service if possible..
Taxonomic impediments prevent identification of specimens	High	High	High	Include R&D component to reduce impediment progressively
Cost of consigning samples is too great	Moderate	Moderate	Moderate	Clearing House to subsidise postage costs from some countries
Network unable to cope with volume of requests	Moderate	High	High	Manage flow of specimens through NPPOs. Proactive communication with stakeholders on system capacity.
No samples sent to Network as people not aware of Network or how it operates	Moderate	High	Low	Promote Network at ASWGC and SOMs. Develop awareness campaign or high-level launch of Network. Develop communication strategy to ensure clear instructions on how to send specimens through Network.
Breakdown in Clearing House protocols or	Low	Moderate	Low	Establish protocols for tracking specimens

Threat	How likely is this to happen?	What would be the impact?	Unmanaged risk	Risk management measures
transportation/post leading to loss of specimens in-transit				
Network unable to identify specimen.	Moderate	High	Moderate	Include expertise from outside ASEAN.
Misidentifications	Low	High	Low	Include disclaimer in protocols. Careful selection of experts. Include Outputs to develop and maintain skills. Refine diagnostic tools.
Internet or local ICT failures	Moderate	Moderate	Moderate	Clearing house to have back-up systems and appropriate support services.
Insufficient funding	Moderate	High	High	Develop credible business plan.
Confidential information released by third party	Low	Moderate	Moderate	Establish protocols.
Country submitting samples does not report detections	Low	Low	Low	Protocols include reminder of IPPC obligations. Submissions to Network made through NPPO.
Quarantine and other regulations inhibit export or import of specimens and samples	High	High	High	Negotiate quarantine protocol with Malaysian or other ASEAN NPPO. Explore alternate options for obtaining identifications of plant disease organisms.
Expertise Register details not current.	Moderate	High	Low	Establish protocols to ensure continual updating of expertise register data.

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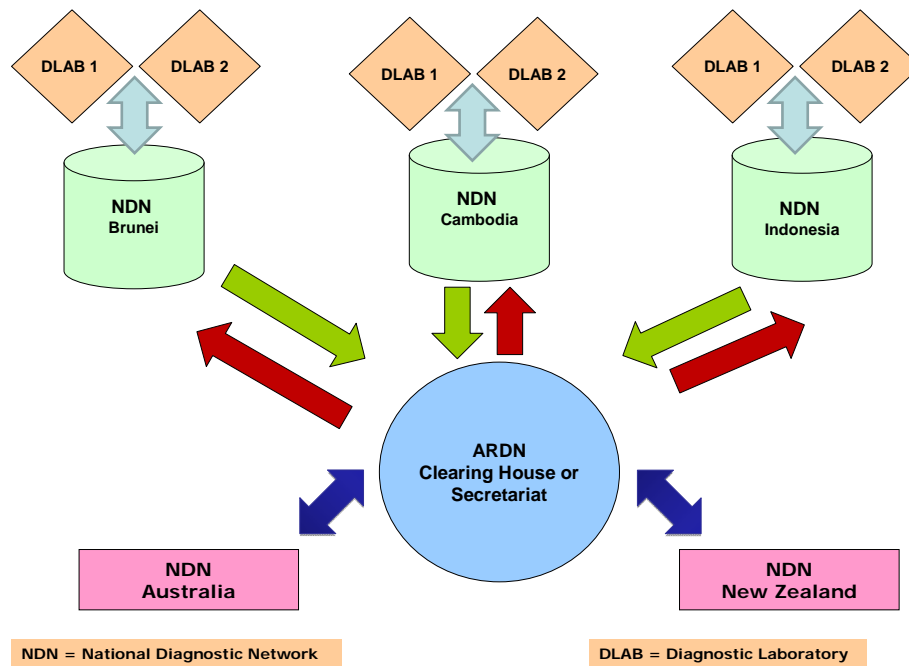


Figure 1. ASEAN Regional Diagnostic Network. Architecture.

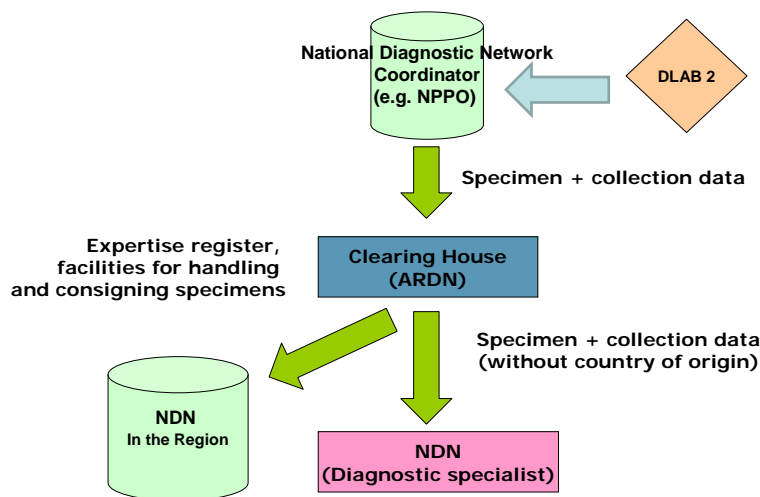


Figure 2. ASEAN Regional Diagnostic Network. Submitting specimens for identification.

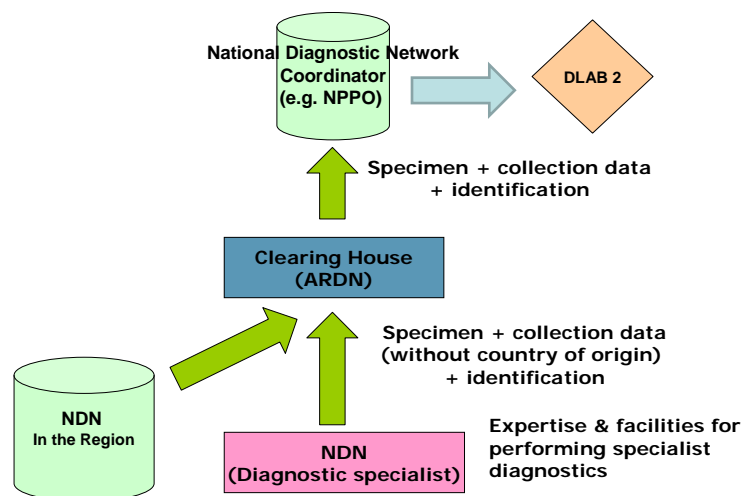


Figure 3. ASEAN Regional Diagnostic Network. Providing identifications.



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