AGF/CRO/11/007/REG	DATE: 20 JUNE 2017

JAIF PROJECT PROGRESS REPORT

PROJECT TITLE:	**Taxonomic capacity building to support market access for agricultural trade in the ASEAN region**	
PROJECT PROGRESS REPORT:	☐ 1st ☐ 2nd ☐ 4th XXXX ☐ 5th	
PROJECT START AND END DATES	From: MAY 2015	To: APRIL 2017
PERIOD COVERED BY THIS REPORT:	From: 1 NOVEMBER 2016	To: 31 APRIL 2017
IMPLEMENTING AGENCY:	ASEAN Plant Health Cooperation Network (APHCN) - ASEANET	
CONTACT PERSONS:	Names: DR LUM KENG YEANG (Chairperson & Project Manager) & DR SOETIKNO S. SASTROUTOMO (Technical Secretary) Tel: +60-3-8943-2921 Fax: +60-3-8942-6490 E-mail: ky.lum@cabi.org AND s.soetikno@cabi.org	

OVERVIEW:

Briefly describe: (i) the objective of the project; (ii) progress in project implementation to date; (iii) any particular issues faced and/or results achieved during this reporting period.

(i) **Overall objective:**
The project will develop and strengthen capacities in taxonomic knowledge to identify and manage quarantine risks associated with agricultural commodities and to accurately diagnose pests and diseases among the ASEAN Member States (AMS).

Intermediate objective: To increase taxonomic capacity of scientists/officers from AMS in 3 groups of insect pests and diseases, i.e. in plant viruses, aphids and leaf miners of agricultural importance.

(ii) Progress till April 2017:

Only one activity has been carried out in the period from November 2016 to April 2017, i.e. on Activity 1.2. Attachment Program on Natural Enemies and Parasitoids of Leafminers held at the Museum Zoologicum Bogoriense, LIPI, Cibinong, Indonesia from 15th January – 17th March 2017. In addition, the website for this project has been updated with the uploading of the 3nd Progress Reports of the Project, training materials, and reference materials and reports of the attachment program. Thirty project briefs were distributed to the STDF Training Workshop on Information Systems for Pest Surveillance and Reporting held in Putrajaya, Malaysia from 5-10 February 2017.

The preparation for the last Training Workshop on Diagnostics of Weevils of Quarantine Importance has been running very smoothly. Nineteen participants will be attending the training and all of their return airtickets have been issued and they are ready for travel to Manila.

(iii) **Results:**

1. Report of the Attachment Program in Japan
2. Project Website (http://aseanet.org/JAIF1.asp)
3. Tentative Program for the Training Workshop on Diagnostic of Weevils
4. Progress Report to the 18th Meeting of ASEAN EWG-PS

PART A: PROGRESS & RESULTS

A. PROGRESS & ACHIEVEMENTS:

Describe progress in implementation during this reporting period, including key outputs/outcomes, based on the approved project document.

Attachment Program on Natural Enemies and Parasitoids of Leafminers

The attachment program was held at the Museum Zoologicum Bogoriense, LIPI, Cibinong, Indonesia from 15th January – 17th March 2017 with the main objective to improve his knowledge and skills for the study of natural enemies of leafminers and to encourage him to contribute towards development of this field in the ASEAN region.

One plant health/biosecurity officer from Malaysia participated in the attachment program, i.e. Mohd Sanusi Mohd Kasim, Assistant Director Plant Biosecurity Division, Department of Agriculture Malaysia.

During the attachment program he was supervised by Prof. Dr. Rosichon, Dr. Awit Suwito, Dr. Hari Sutrisno. The topic of the lectures and discussion during the 2 months attachment program were as follows:

1. Understanding of Dipteran and Lepidopteran Leaf Miners in South East Asia.
2. Understanding the South East Asian parasitoids of dipteran leafminer,
3. Understanding the use of species identification key and related references for leafminers and their parasitoids.
4. Understanding surveillance technique, sampling and rearing, mounting specimens of leafminers and the parasitic wasps that associated with leafminers.
5. Practical use of Dino lite digital microscope for imaging specimens, making scales on the pictures for each magnification and to learn how to combine multilayer images using Helicone focus/Combine ZP as well as editing pictures using Adobe Photoshop,
6. Technical drawing of specimens digitally/ conventionally
7. Understanding the concept of leafminers and their parasitoid management, how seriously they damage horticultural crops, and how to control them appropriately using some potential parasitoid.

The full reports prepared by Prof. Rosichon and participant are given in the **Attachments 1-2.**

Training Workshop on Diagnostics of Weevils of Quarantine Importance

The training workshop will be organized in the Philippines with the collaboration of the Crop Protection Cluster, UPLB, Los Banos (contact person Ass. Prof. Dr. Sheryl A. Yap) from July 10-22, 2017. The resource person from Japan would be Dr. Hiraku Yoshitake from the Insitute of Agro-Environmental Sciences, NARO, Tsukuba.

Nineteen participants from 10 ASEAN member states (2 each from Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand and Vietnam, and one from Singapore) will be attending the training workshop.

B. **TIMEFRAME AND BUDGETING**

Explain whether the project is on-track with regard to: (i) the budget; and (ii) the original timeframe. If either the expenditures and/or timeframe are off-track, please explain and describe the corrective actions being taken.

Project implementation is behind schedule, as a result of the cancellation of the Training Workshop and Attachment Program on Diagnostics of Aphids which would have started in September 2016. However, we managed to organize replacements for these 2 activities, i.e. on Diagnostics of Weevils, which was approved by JAIF for implementation and for the training workshop from 10-22 July 2017.

Proposal to extend the Project

A proposal for an extension of the Project until June 2018 has been submitted to ASEAN Secretariat and JAIF Management Team for consideration and approval.

The project is currently due to end on 30th April 2017 but after a recent progress review, it is projected that several activities will not be completed within the current 2-year timeframe and will consequently delay the final delivery of the project. A summary of the outstanding activities and planned alternative action are outlined below:

a). Training Workshop on Weevils of Quarantine Importance -We will organize this training workshop from 10-22 July 2017. Approval from JAIF on this proposed change of activity was given on 18th October 2016.

b). Attachment program on Weevils of Quarantine Importance - The implementation of this program can be arranged only after the training workshop in July 2017 is completed. We are planning to organize this in September/October 2017 after consultation with the resource persons (International & Regional) during the training at UPLB, Philippines.

c). End Project Meeting – The meeting would involve members of the Steering Committee and would only be implemented after the above two proposed activities have been completed and the draft Final Project Report is prepared for discussion at the meeting. It is proposed that the meeting be organized for early December 2017. However, if the request for holding additional activities to be supported by the remaining unspent project funds is approved, the End Project Meeting would be organized in only in May 2018.

The estimated time needed to finalize all planned activities and production of the final report would not exceed an additional twelve months (until June 2018). This would give the Project Manager an opportunity to complete all activities.

The ASEAN Secretariat has approved the proposal pending final approval from the Government of Japan.

Project Budget

Budget expenditures during this reporting period was only US$ 37,539.55 (Attachment 5). So far we managed to accumulate project saving totalling of about US$230,000. - (from Component 1, US$ 162,394.62 and from Contingency, US$ 68,150.35).

C. OTHER IMPLEMENTATION ISSUES

Describe any significant changes to the project design, context or partners during the reporting period, or any other issues faced, and actions that are being taken in response, if appropriate.

Proposal for utilizing the Unspent Project Fund for New Activities

As of 30th May 2017, we have accumulated project savings totalling about US$230,000. -Therefore, we have proposed to ASEAN Secretariat & JAIF MT to approve use of the unspent budget gainfully to implement 3 (three) activities as follows:

a). *"Study visit to Japan national SPS/Plant Health laboratories cum Training workshop on the Identification of Fruit Flies"* under the current project. This activity is in the list of proposed activities (in total 10 activities) endorsed by the 18th Meeting of the ASEAN EWG-PS held in Vientiane, Lao PDR from 18-19 July 2016. This list has been communicated and discussed with our counterparts in Japan during our visit in August 2016, and specifically for the above with Ms. Akiko Nagano (MAFF) and Prof. Keiko Natsuaki (TUA). They have proposed that the activities on "Identification of fruit flies by molecular techniques" and on "Study visit to SPS/Plant Health laboratories and entry points in Japan" be combined into one activity as they only have limited resource persons available, and two weeks per activity is a bit too long. In addition, this proposal has been discussed in great detail with the Japanese counterparts and they have already come up with a proposed program for implementation in 2017/18.

b) To continue the service of our IT/Web-developer officer for another 12 months, i.e. US$ 9,000. - (Component 2-D4).

c) To continue the service of our Financial Assistant for another 12 months, i.e. US$ 9,000. - (Component 3-E1).

The ASEAN Secretariat has approved the proposal pending final approval from the Government of Japan.

D. OTHER COMMENTS:

Please provide any other relevant information or observations on the project, e.g. on lessons learned, particular challenges or issues that may arise in the next reporting period, changes to the logframe, etc.

Proposal for JAIF Phase 2 Project

In the 18th ASEAN EWG-PS Meeting held in Vientiane, Laos, in 2016, Member States have endorsed a proposal to request a second phase to the Project. Accordingly, the proposal for Phase 2 of the Project has been developed and submitted to ASEC in November 2016, to seek continued support from JAIF. In this project 10 (ten) Training Workshops and 3 (three) attachment programs with a proposed budget of almost US$ 2 million had been proposed. After consultation with JAIF Management Team, ASEC has replied in December 2016 with several comments on the Phase 2 proposal for further revision, improvement and submission. ASEC has also suggested the APHCN-ASEANET conduct a survey in the AMS especially for ex-participants of the Phase 1 of the Project on the benefits of the project as well the status of their capabilities relating to their diagnostics expertise and facilities. ASEC has also indicated that JAIF will only accept the Phase 2 project for one year with a maximum budget of US$ 500,000.-

Based on the above advice from ASEC, we have revised the proposal to only 2 (two) training workshops and 1 (one) attachment program in Japan, i.e. on:

a). Training workshop on Diagnostic of Plant Parasitic Nematodes to be held in Indonesia with a Japanese resource person, Dr. Prof. Dr. Hideaki Iwahori from Department of Bioresource Sciences, Faculty of Agriculture, Ryukoku University, Otsu, Shiga 520-2194, Japan.

b). Training workshop on Diagnostics of Begomovirus and the Use of LAMP-PCR to be held in the Philippines with a Japanese resource person, Prof. Dr. Masashi Ugaki from Laboratory of Bioresource Technology, Department of Integrated Biosciences, Graduate School of Frontier Science, The University of Tokyo, Kashiwa-shi, Chiba-ken 277-8561, Japan.

c). Attachment program on Diagnostic of Plant Parasitic Nematodes to be held at the Department of Bioresource Sciences, Faculty of Agriculture, Ryukoku University, Otsu, Shiga 520-2194, Japan under the supervision of Prof. H. Iwahori.

The revised proposal has been submitted to ASEC and JAIF Management Team on 29th May 2017 for their funding consideration and approval.

Provide a list of key documents (e.g. mission reports, training materials, workshop reports, etc.) produced during this reporting period. Copies of the final versions of these documents should be attached to this report.

1. Report of the Attachment Program on Natural Enemies and Parasitoids of Leafminers (Attachments 1-2)
2. Proposal for utilizing the Unspent Project Fund for New Activities (Attachment 3)
3. Proposal for JAIF Phase 2 Project (Attachment 4)

E: FINANCIAL OVERVIEW (SEE ATTACHMENT 5)

	JAIF*	**In kind / Other****	**Total**
a) Total project budget (US$)	892,354.10	-	892,354.10
b) Total amount received to date (US$)	847,736.40	-	847,736.40
c) Total expenditure during the reporting period*	37,539.55	-	37,539.55
d) Total expenditure to date (US$)	436,802.73	-	436,802.73
e) Unspent funds a) – d) (US$)	455,551.37	-	455,551.37

Attachment 1

Two Months Attachment Program on
The Host Plant and Parasitoid Preferences of Leafminer Flies in Altitudinal Distribution

at
the Museum Zoologicum Bogoriense, LIPI, Cibinong, Indonesia
15th January to 17th March, 2017

Organized by:

LIPI

Museum Zoologicum Bogoriense, LIPI

In Collaboration with:

bionet aseanet

ASEAN Network on Taxonomy

2017

ATTACHMENT PROGRAM ON ADVANCE THE HOST PLANT AND PARASITOID PREFERENCE OF LEAFMINER FLIES IN ALTITUDINAL DISTRIBUTION

(JAIF Funded Project on Taxonomic Capacity Building to Support Market Access for Agricultural Trade in the ASEAN Region)

Venue:

Division of Zoology “Museum Zoologicum Bogoriense”, Research Center for Biology, Indonesian Institute of Science, Cibinong, Bogor, Indonesia

Duration:

15 January – 11 March 2017

Name of Participant

Mohd Sanusi Mohd Kasim
Agriculture Officer

Institutional Address and Country:

Entomology Unit, Diagnostic and Expertise Section, Plant Biosecurity Division, Department of Agriculture Malaysia, Jalan Gallagher, 50480, Kuala Lumpur, Malaysia.

1. Background

The Attachment Program on Leafminers of Agriculture Importance was held at the Museum Museum Zoologicum Bogoriense, Centre for Research Development in Biology, LIPI, Cibinong, Bogor, Indonesia from 16 February to 11 March 2017. This internship training is one of the The ASEAN Plant Health Cooperation Network (APHCN) of ASEANET program for Taxonomic capacity building to support market access for agricultural trade in the ASEAN region funded by Japan ASEAN Integration Fund (JAIF). The purpose of training is to Develop and strengthen capacities among the ASEAN Member States (AMS) in taxonomic knowledge to be able to accurately diagnose and identify pests and diseases and manage quarantine risks associated with agricultural commodities

Previous training workshops that were conducted in years 2016 have been focusing on basic knowledge about the concept of leafminers as economic insect pest in horticultural crops and their management. A series of two month attachments program were conducted to enhance capabilities of diagnostics in identification of important leafminer pests and their parasitoids. This attachment program was designed into (3) three major activities including laboratory studies, field exercises and specimens collection study in order to provide technical knowledges on diagnostic and taxonomic skills in identification species. The trainee were exposed on surveillance technique, method of sampling and rearing, mounting specimens and taxonomic skills in identifying the species of leafminers and parasitoids that associated with leafminer.

2. Objective :

The objectives of the trainings are:

a) To provide and enhance diagnostic skills for identification of leafminers and their parasitoid

b) To gain deep understanding on surveillance technique and method used for sampling, rearing, mounting and data analysis of leafminers and parasitoid

c) To study the distribution of leaf miner species and parasitoids with different altitude in agriculture production area

3. Tentative Training Program

Date	Mentor	Mentor
15 Jan 2017 (Sunday)	• Arrived in Bogor, Jakarta.	

16 Jan 2017 (Monday)	• Briefing and orientation.
	  • Administration, accommodation, transportation and management support.
	  • Visit Insect laboratory and Insect Collection
		Ms Gina Andriana
		Prof Dr Rosichon

17 Jan 2017 (Tuesday)	• Briefing and discussion of work program for 2 month internship training • Introduction of Flies (Diptera), Taxanomy and Morphological Character of Diptera. • Collection Method and Dried Specimens	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan
18 Jan 2017 (Wednesday)	• Study Museum collection • Discussion on program of surveillance of leafminers and their parasitic waps	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
19 Jan 2017 (Thursday)	• Preparation equipment for fieldwork • Program survey of liriomyza leafminers and their parasitic waps on 21-23 Jan 2017 in Agriculture Production Area, Banjanegara-Wonosobo, Central Java.	Dr Awit Suwito Mr Darmawan Mr Giyanto
20 Jan 2017 (Friday)	• Depart to Banjanegara for Program survey of liriomyza leafminers and their parasitic waps.	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
21 Jan 2017 (Saturday)	• Field work • Survey of liriomyza leafminers and their parasitod in Banjanegara-Wonosobo, Central Java.	
22 Jan 2017 (Sunday)	• Field work • Survey of liriomyza leafminers and their parasitod in Banjanegara-Wonosobo, Central Java.	
23 Jan 2017 (Monday)	• Field work • Surveilance of liriomyza leafminers and their parasitod in Banjanegara-Wonosobo, Central Java.	
24 Jan 2017 (Tuesday)	• Return to LIPI, Cibinong.	

25 Jan 2017 (Wednesday)	• Preparing laboratory equipments and museum collections	Dr Awit Suwito Mr Darmawan Mr Giyanto
26 Jan 2017 (Thursday)	• Laboratory works • Proses sampling for rearing and record data	Dr Awit Suwito Mr Darmawan Mr Giyanto
27 Jan 2017 (Friday)	• Laboratory works • Observe rearing sample and Sorting sweeping sample	Dr Awit Suwito Mr Darmawan Mr Giyanto
30Jan 2017 (Monday)	• Laboratory works • Observe rearing sample and Sorting sweeping sample	Dr Awit Suwito Mr Darmawan Mr Giyanto
31 Jan 2017 (Tuesday)	• Demonstration using Dino lite digital microspcope for imaging specimen, • Combine multilayer image using Helicone focus / Combine ZP, • Editing pictures using Adobe Photoshope, Technical drawing speciments digital/ manual	Dr Awit Suwito Mr Darmawan
1 Feb 2017 (Wednesday)	• Laboratory works • Observe rearing sample and Sorting sweeping sample	Dr Awit Suwito Mr Darmawan Mr Giyanto
2 Feb 2017 (Thursday)	• Laboratory works • Observe rearing sample and Sorting sweeping sample	
3 Feb 2017 (Friday)	• Laboratory works • Observe rearing sample and Sorting sweeping sample • Disscusion on temporary result on rearing liriomyza and parasitic waps	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
6 Feb 2017 (Monday)	• Laboratory works • Observe rearing sample and mounting dried specimen	Dr Awit Suwito Mr Darmawan Mr Giyanto
7 Feb 2017 (Tuesday)	• Laboratory works • Observe rearing sample and mounting dried specimen	Dr Awit Suwito Mr Darmawan Mr Giyanto
8 Feb 2017 (Wednesday)	• Discussion and identification • Morphological character of Liriomyza and their parasitod	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto

9 Feb 2017 (Thursday)	• Mounting, labelling and Identification specimens	Dr Awit Suwito Mr Darmawan Mr Giyanto
10 Feb 2017 (Friday)	• Mounting, labelling and Identification specimens • Preservation and mounting dried specimens using HMDS (1,1,1,3,3,3-HEXAMETHYLDISILAZANE)	Dr Awit Suwito Mr Darmawan Mr Giyanto
13 Feb 2017 (Monday)	• Mounting, labelling and Identification specimens • Study specimens of liriomyza and parasitic waps morphological character of leafminers and parasitic waps	Dr Awit Suwito Mr Darmawan Mr Giyanto
14 Feb 2017 (Tuesday)	• Disscusion on temporary result on rearing liriomyza and parasitic waps • Identification to liriomyza species and parasitic waps	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
15 Feb 2017 (Wednesday)	• Study specimens collection • Identification to liriomyza species and parasitic waps	Prof Dr Rosichon Dr Awit Suwito
16 Feb 2017 (Thursday)	• Study specimens collection • Identification to liriomyza species and parasitic waps	Prof Dr Rosichon Dr Awit Suwito
17 Feb 2017 (Friday)	• Study specimens collection • Identification to liriomyza species and parasitic waps	Prof Dr Rosichon Dr Awit Suwito
20 Feb 2017 (Monday)	• Study specimens collection • Identification to liriomyza species and parasitic waps • Disscusion on temporary result on rearing liriomyza and parasitic waps	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
21 Feb 2017 (Tuesday)	• Study specimens collection • Capturing image technique using Dino lite digital	Dr Awit Suwito Mr Darmawan
22 Feb 2017 (Wednesday)	• Study specimens collection • Capturing image technique using Dino lite digital	Dr Awit Suwito Mr Darmawan
23 Feb 2017 (Thursday)	• Study specimens collection • Capturing image technique using Dino lite digital	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
24 Feb 2017 (Friday)	• Study specimens collection • Identification to liriomyza species and parasitic waps	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto

27 Feb 2017 (Monday)	• Discussion and identification of parasitic waps - Pteromalidae, Fitigidae, Eulophidae	
28 Feb 2017 (Tuesday)	• Study specimens collection • Identification to liriomyza species and parasitic waps • Discussion and identification of parasitic waps - Pteromalidae, Fitigidae, Eulophidae	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
1 Mac 2017 (Wednesday)	• Study specimens collection • Identification to liriomyza species and parasitic waps • Discussion and identification of parasitic waps - Pteromalidae, Fitigidae, Eulophidae	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
2 Mac 2017 (Thursday)	• Study specimens collection • Identification to liriomyza species and parasitic waps • Discussion and identification of parasitic waps - Pteromalidae, Fitigidae, Eulophidae	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
3 Mac 2017 (Friday)	• Disscusion on temporary result on rearing liriomyza and parasitic waps	Prof Dr Rosichon Dr Awit Suwito
6 Mac 2017 (Monday)	• Data analysis and training report	Dr Hari Sutrisno. Dr Awit Suwito
7 Mac 2017 (Tuesday)	• Data analysis and training report	Dr Hari Sutrisno. Dr Awit Suwito
8 Mac 2017 (Wednesday)	• Data analysis and training report	Dr Hari Sutrisno. Dr Awit Suwito
9 Mac 2017 (Thursday)	• Presentation of the result training at MZB	Prof Dr Rosichon Dr Awit Suwito
10 Mac 2017 (Friday)	• Free segment	

4. Program activities

4.1 Field studies

Prof Dr Roshichon began the 1st session by a briefing on training activities, laboratory exercise, specimens collection studies, surveillance and resource persons who involved for this 2 month attachment program. He highlighted the importance of expert development for insect pest identification and surveillance. He also recommended trainee to take opportunity from this training to enhance knowledge and skill, to share experience and extension technology for agriculture benefit in future especially related leafminers and their parasitoid.

Several discussion and the preparation for the program of survey of leafminer and parasitoid have taken place to identify altitudinal sampling points and specimen collecting methods. The necessary equipment for the surveillance and collection samples were prepared properly.

The survey was carried out on 21-25 January 2017 in agriculture production areas Banjanegara - Wonosobo, Central Java with objective is to study the distribution and diversity of liriomyza species and their parasitoid with different altitude. The survey was laid down under randomized survey point focusing on several host plants with different altitude from the lowers at 100 meters to the higher 2200 meters above sea level.

4.2 Laboratory studies

Trainee working in the lab to correctly and effectively process all collected samples. The infested leaves and sweeping samples have been taken for rearing and laboratory observation. The infested leaves were placed individually in rearing cups. Rearing larvae and pupae were observed every day until the emergence of leafminers and parasitoids within at least 30 days. While, the sweeping samples were sorted from any non-targeted insects and foreign materials.

Any emergence of insect from infected leaf samples will be collected and preserved into 70% alcohol for preservation. The small specimens were handled carefully to be pinned directly on the body with insects pinned precisely. Morphological character of each specimens were observed under microscope for identification

The rest of month was spent in the laboratory, where trainee has been exposed to learn on samples management such as rearing, sorting, mounting specimens, labelling and data recording. The trainee also has to learn and well-understand an important character of targeted specimens of leafminers and parasitoids precisely during sorting and data recording. The basic characteristic focused on Leafminer (Agromizidae) and Parasitoid (Figitidae, Pteromalidae, Eulophidae & Braconidae)

5.3 Specimens Collection Study

The majority of day was spent in the Insect Collection Centre were trainee began the process of identifying the specimens collected from the field survey. Prof Dr Rosichon and Dr Awit Suwito provided a number of references and keys of illustrations both electronic and physical copies to assist the trainee to properly key out the specimens (Annex 3).

There were several lectures, discussions and demonstrations about the technique of mounting and labelling specimens, managing specimens and identifications of leaf miners and parasitoid species. Prof Dr Rosichon gave an explanation on identification of parasitoids. He emphasized an important morphological character to distinguished species among parasitoids that associated with leafminers.

Began identifying the various structures of the liriomyza species and their parasitoid under micropscope. Several species of leafminers and parasitoids were found such as Agromizidae (*Liriomiza hudobriensis, L. sativae, and L. chinensis*); and parasitoids - Figitidae (*Gronotoma micromorpha, Nordlanderia plowa*), Braconidae (*Opius chromatomyiae*) Eulophidae (*Hemiptarseus varicornis, Quadrastichus*

liriomyza, Asecodes erxias, Asecodes delucchii, Chrysoharis pentheus).

The result survey shown that leafminer species *Liriomyza huidoriensis* was found in highland production areas Banjanegara-Wonosobo from with altitude above altitude 1147 to 2076 meters. While, *L. sativae* was found in lowland areas to the highest altitude 1151 meters.

The braconid parasitoid, *Opius chromatomyiae* seems to be the dominant species 1000 meters. This species was collected with the great number around 400 specimens with more than 80% caught by sweeping net and the rest emerged from rearing samples.

The information gathered through our field surveys could be used to alert growers and agriculture officers for the presence of leafminer pests and outbreaks. It will help to determine pest trends affecting agricultural management practices and any programs related in developing biological control agents using parasitoids. Result survey shown in Annex 1.

4.5 Others activities

Dr Awit Suwito gave a lecture on Introduction of diptera, morphology characteristic, and method of collection and preservation. Preservation and mounting dried specimens using HMDS (1,1,1,3,3,3-HEXAMETHYLDISILAZANE) to avoid dried specimens from shrink and crumple and keep the specimens look fresh and better. He also demonstrates an imaging specimens performed by Dino lite digital microscope including magnification and measurement of specimens. The multilayer focus image will be combined by using Helicone focus / Combine ZP. This focus staking technique give an advantage to create eye-catching image and make an images stand out (Annex 2).

On the last week, a data survey and result discussed for report submission to CABI and Research Center for Biology, Indonesian Institute of Science (LIPI). The presentation of attachment program

outcomes and handing out of certificates brought the two-month attachment program to a close.

5. Summary of Attachment

This attachment program produced very significant and meaningful. Direct coaching from experts provides opportunity for the trainee to be more focused during learning session. This opportunity would help to enhance capacity with better understanding of knowledge and skills in implementing pest surveillance, field diagnostic and familiarized with the insect morphological character for identification. The trainee has Detail reference materials provided most likely to be useful in identification species and data analysis. The results of the survey would benefit for monitoring population dynamic of leafminer pests and further research and development of biological control agents using parasitoid against leafminer pests. As a trainee of attachment program, knowledge sharing and experience in pest surveillance, country's pest of concerns and their management become more interesting. Through the presentation in the end of attachment program, have shared lessons and experience in pest surveillance. It also provides an opportunity to express priorities of concerns and interest on the pests and crops in association with trade.

6. Recommendation for Future Activities

The several future activities were identified as follows:

- Conduct training for technical officer to increase capability in insect diagnostic association with leafminers and parasitoids
- Update national information and collection of leafminer pests and parasitoids
- Collaboration and exchange information among SEA Countries in developing short-term and long term strategies for the project related leafminers and parasitoids.

7. Acknowledgement

I would like to express my deepest appreciation to the sponsor of this project, Japan-ASEAN Integration Fund (JAIF) for giving the opportunity to ASEAN countries to involve in this capacity building program.

I would like to thank to Dr.Lum Keng Yeang and Dr. Soetikno Selamat for giving me chance to be selected for the attachment program in Indonesia. This attachment program opportunity I had was a great chance for learning and technical skill development in diagnostic of insects. It was a pleasure to meet great people and profesionals, shared their experiences and knowledges through this training period.

I also would like to express my deepest thanks to Prof Dr Roshichon, Dr Hari Sutrisno, Dr Awit Suwito, Mr Darmawan and Mr Giyanto for their valuable guidance and support that had provided right from the beginning till the successful completion of attachment program. Thank you very much for everything.

Attachment 2

Report of Two Months Attachment Program on Diagnostics of Leafminers and Their Parasitoids of Agricultural Importance

at
the Museum Zoologicum Bogoriense, LIPI, Cibinong, Indonesia
15th January to 17th March, 2017

Organized by:

LIPI

Museum Zoologicum Bogoriense, LIPI

In Collaboration with:

bionet aseanet

ASEAN Network on Taxonomy

2017

REPORT OF THE TWO MONTHS ATTACHMENT PROGRAM ON DIAGNOSTICS OF LEAFMINERS AND THEIR PARASITOIDS OF AGRICULTURAL IMPORTANCE

At

Laboratory of Entomology, Division of Zoology, Reseach Center for Biology

The Indonesian Institute of sciences

Jl. Raya Bogor Km 46 Cibinong, Bogor 16911

January 16-March 10, 2017

By

Prof. Dr. Rosichon Ubaidillah, Dr. Awit Suwito, Dr. Hari Sutrisno

Organised

by

Division of Zoology, Research Center for Biology

The Indonesian Institute of Science

In collaboration with

ASEAN Net on Taxonomy

2017

The report of the follow up attachment program

At

Laboratory of Entomology, Division of Zoology, Research Center for Biology, The Indonesian Institute of Science, Bogor-Indonesia

January 15-March 17, 2017

By

Prof. Dr. Rosichon Ubaidillah, Dr. Awit Suwito, Dr. Hari Sutrisno

Background

Leafminers are an immature stage insect that feed on leaf tissues within or between the upper and lower leaves during a part or the whole of their larvae and pupae stages. This larvae could be members of the flies (Diptera), moths (Lepidoptera), beetles (Coleoptera), or sawflies (Hymenoptera). Leafminers attack many species of plants, including vegetable crops, flowering plant, trees and shrubs. Many species of leafminers are important pest in agriculture, especially the diptera and lepidopteran leafminers. The well-known dipteran leafminers pests are belong to the genus of *Liriomyza*, *Phytomyza*, *Chromatomyia* and *Agromyza* (Agromyzidae) which are the most serious pests of horticulture crops, and ornamental plants. In addition, the lepidopteran leafminers often cause serious damage to fruit trees and ornamental plants. The *Phyllocnistis citrae* (Gracillariidae) attacks leaves of citrus plants and inflict a heavy damage on the plants. Apple blotch leafminers (*Phyllonorycter* spp., Gracillariidae), the horse chestnut leafminer (*Cameraria ohridella*, Gracillariidae) and the tea leaf-roller (*Caloptilia theivora*, Gracillariidae; larvae of this species mine leaves during the first three instar stages) are famous as lepidopteran pest leafminers.

Damage by leafminers on horticultural plants is conspicuous in many countries of South-east Asian region. Particularly, several species of *Liriomyza* have invaded since 1990' and become a major pests of vegetable crops such as potatoes, tomatoes, cucumbers, eggplants, lettuce, spinach and legumes. South-East Asian farmers have struggled to control the pests by using insecticides. By common application of insecticides to combat the pest, has become a serious environmental problem, including insecticide resistance, in which most of crops are receiving twice-weekly sprays. In addition, the natural enemies such as parasitoids are also affected by the insecticides sprays. Accordingly, the sustainable management of these pests is a central issue in the field of horticulture and applied entomology. However, it is still difficult to identify the species of *Liriomyza* leafminers because they are polyphagous and their mines are very similar to each other, to say nothing of

larvae. This can delay an effective management of the concerned leafminer. Similar problems could occur in other leafminers.

South-East Asian Workshop on species identification of dipteran and lepidopteran leaf miners and their parasitoid has been done on januray to februari 2016. We trained the 20 participant from 10 South-East Asian countries. The main objective of the course was to understand the taxonomy and ecology of leafminers, as well as to improve their skill on the management of leaf miners. The second objective was to improve the capabilities on collecting samples, preserving and identifying them based on either morphological characters or DNA barcoding. The extension of the course was done to the selected participant of the previous workshop.

Project Training Title:

Training Workshop of THE ATTACHMENT PROGRAM ON DIAGNOSTICS OF LEAFMINERS AND THEIR PARASITOIDS OF AGRICULTURAL IMPORTANCE

Participant:
Mohd Sanusi Mohd Kasim of Assistant Director Plant Biosecurity Division,
Department of Agriculture Malaysia.

Team Trainers:

Dr. Awit Suwito (Diptera), Dr. Hari Sutrisno (Lepidoptera=Moths) and Profesor Dr. Rosichon Ubaidillah (Parasitic Wasps). Field Assistant Giyanto and Darmawan (Entomology Technician). Gina Andriyana (Administrator)

Date and Venue:
The training-workshop took place on *16 January – 10 March 2017* at Laboratory of Entomology, Division of Zoology, Research Center for Biology, The Indonesian Institute of Science, Bogor-Indonesia

Objective

The main objective of the training is to develop and strengthen capacity of the participant as an ASEAN Member States (AMS) in taxonomic knowledge to be able accurately to diagnose and identify pests and manage quarantine risks associated with agricultural commodities, especially the leaf miners and their parasitoids

The second objective of the two months attachment program is to several techniques including collecting samples of leafminers on different sites and crops, then how to process and identify them. The participant also learn how to use several keys to identify the leafminer and their parasites. The participant was understand how to recognize some important morphological characters of leaf miners and parasites that has been collected in the field trip.

Content of the Program

a. **Lectures and discussions:**

Lectures and discussions were given at the begining of the training before the fieldwork and involved trainers: Prof. Dr. Rosichon, Dr. Awit Suwito, Dr. Hari Sutrisno. The topic of the lectures and discussion as follow:

1. Understanding of Dipteran leaf miners in South East Asia and minor subject lepidopteran leaf miners.
2. Understanding the South East Asian parasitoids of dipteran leafminer,
3. Understanding the use of species identification key and related references for leafminer and their parasitoid.
4. Understanding surveillance technique, sampling and rearing, mounting specimens leafminers and the parasitic wasps that associated with leafminer.
5. Practiced using Dino lite digital microspcope for imaging specimen, making scales on the pictures for each magnification and learn how to combine multilayer image using Helicone focus / Combine ZP as well as the editing pictures using Adobe Photoshop,
6. Technical drawing specimens digitally/ convencionally
7. Understanding about the concept of leafminers and their parasitoid management, how seriously they damage horticultural crops, and how to control them appropriately using some potential parasitoid.

b. Fieldwork:

Survey of *Liriomyza* Leafminers and their Parasitods was done on January 21st-25th, 2017, in Agriculture Production Area Banjenegara - Wonosobo, Central Java, Indonesia. The purpose of the study was to understand the distribution and species composition of *Liriomyza* and their parasitoids population associated with different altitude and vegetable crops. The methodology of the survey were randomized point which focusing on several host plants with gradually altitude from 100 - 2200 meters above sea level. Each site points were observed the presence of leafminers and their parasitic wasp, symptoms and damages, natural enemies, monitoring, and its control measures.

c. Laboratroy works:

a. Rearing of leafminers and parasitoids from infested leaves were collected from fieldworks
b. Mounting and labelling specimens, and making slide preparations of genitalia.
   The participan practicing taxonomic skills in identifying the species of major pest leafminers and their parasite based on the morphological characters.
c. At the end of the training program, participant presented his experience and the results of training and certification

Outcome

On the whole of the training, the participant receive the useful knowledge and practical experiences on taxonomy and the management of *Liriomyza* leaf miners and their parasitoids in South East Asia. We have trained the new knowledge, learn how to use theory and fieldwork on surveillance technique, sampling and rearing, mounting specimens leafminers and their parasitic waps. In addition, the participant has been able to identify the species of *Liriomyza* and the parasitic wasps that had been collected from fieldworks. The achievement of the training can be developed by the participant himself in his country in the near future. Several of learning goals has been gotten from the lectures and discussion during the training in laboratory and in the fieldwork. We believe the participant got insight into professional practice in pest management especially in leafminers. However, there are still a lot to discover and improve in the future time. The internship was also good to find out what the strengths and weaknesses are. These help the participant to define what skills and knowledge he has to improve in the coming time.

Field study has resulted 4 species of Liriomyza (*L. chinensis, L. sativae, L. huidobrensis* and *L.trifolii*) and 7 species of parasitic wasp (*Opius chromatomyiae, Asecodes deluchii, A. Erxias, Hemiptarsinus varicornis, Gronotoma micromorpha, Neocrysocharis okazakii, Quadrastichus liriomyza* and *Pediobius metallicus*). The study has shown that those *Liriomyza* and their parasitoids found on several different host plants, including potatoes (*Solanum tuberosum*), Onion (*Alium ampeloprassu*) and Red bean (*Phaseolus vulgaris*). They have been established and could be found from altitude 1147 to 2076 meters, whereas *L. sativae* could be found in lowland area on host plants such as *Phaseolus vulgaris, Vigna unguiculota* and *Cucumis sativus* from altitude 113 to 1151 meters above sea level.

Recommendations

It would be more beneficial if the participants were given the equipments that commonly used during the training, so it would be easier for them to develop it in their country.

Acknowledgment

We would like to acknowledge and extend our gratitude thank to JAIF for the financial support to this program. We thanks to Dr. Seotikno.S. Sastroutomo for his help and his arrangement of the training. We also would like to thanks Dr. Witjaksono (the director Center Reserch for Biologi-LIPI) for his support. We sincere gratitude to Gina Andriana, Giyanto, Darwaman, Rina for providing their valuable time and cooperate with us, and without their help this training program would not have been easy to prepare. Moreover, we also thankful to Mohd Sanusi Mohd Kasim (Participant) for his work hard and discipline during attending lectures, discussions, laboratory and fieldwork.

Appendix 1. Schedule training program

Date	Mentor	Mentor
15 Jan 2017 (Sunday)	• Arrived in Bogor, Jakarta.	

16 Jan 2017
(Monday)
	• Briefing and orientation.
	  • Administration, accommodation, transportation and management support.
	  • Visit Insect laboratory and Insect Collection
		Ms Gina Andriana
		Prof Dr Rosichon

17 Jan 2017 (Tuesday)	• Briefing and discussion of work program for 2 month internship training • Introduction of Flies (Diptera), Taxanomy and Morphological Character of Diptera. • Collection Method and Dried Specimens	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan
18 Jan 2017 (Wednesday)	• Study Museum collection • Discussion on program of surveillance of leafminers and their parasitic waps	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
19 Jan 2017 (Thursday)	• Preparation equipment for fieldwork • Program survey of liriomyza leafminers and their parasitic waps on 21-23 Jan 2017 in Agriculture Production Area, Banjanegara-Wonosobo, Central Java.	Dr Awit Suwito Mr Darmawan Mr Giyanto
20 Jan 2017 (Friday)	• Depart to Banjanegara for Program survey of liriomyza leafminers and their parasitic waps.	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
21 Jan 2017 (Saturday)	• Field work • Survey of liriomyza leafminers and their parasitod in Banjanegara-Wonosobo, Central Java.	
22 Jan 2017 (Sunday)	• Field work • Survey of liriomyza leafminers and their parasitod in Banjanegara-Wonosobo, Central Java.	
23 Jan 2017 (Monday)	• Field work • Surveilance of liriomyza leafminers and their parasitod in Banjanegara-Wonosobo, Central Java.	
24 Jan 2017 (Tuesday)	• Return to LIPI, Cibinong.	
25 Jan 2017	• Preparing laboratory equipments and museum collections	Dr Awit Suwito

(Wednesday)		Mr Darmawan Mr Giyanto
26 Jan 2017 (Thursday)	• Laboratory works • Proses sampling for rearing and record data	Dr Awit Suwito Mr Darmawan Mr Giyanto
27 Jan 2017 (Friday)	• Laboratory works • Observe rearing sample and Sorting sweeping sample	Dr Awit Suwito Mr Darmawan Mr Giyanto
30Jan 2017 (Monday)	• Laboratory works • Observe rearing sample and Sorting sweeping sample	Dr Awit Suwito Mr Darmawan Mr Giyanto
31 Jan 2017 (Tuesday)	• Demonstration using Dino lite digital microspcope for imaging specimen, • Combine multilayer image using Helicone focus / Combine ZP, • Editing pictures using Adobe Photoshope, Technical drawing speciments digital/ manual	Dr Awit Suwito Mr Darmawan
1 Feb 2017 (Wednesday)	• Laboratory works • Observe rearing sample and Sorting sweeping sample	Dr Awit Suwito Mr Darmawan Mr Giyanto
2 Feb 2017 (Thursday)	• Laboratory works • Observe rearing sample and Sorting sweeping sample	

3 Feb 2017
(Friday)
	• Laboratory works
	  • Observe rearing sample and Sorting sweeping sample
	  • Disscusion on temporary result on rearing liriomyza and parasitic waps
		Prof Dr Rosichon
		Dr Awit Suwito
		Mr Darmawan
		Mr Giyanto

6 Feb 2017 (Monday)	• Laboratory works • Observe rearing sample and mounting dried specimen	Dr Awit Suwito Mr Darmawan Mr Giyanto

7 Feb 2017 (Tuesday)	• Laboratory works • Observe rearing sample and mounting dried specimen	Dr Awit Suwito Mr Darmawan Mr Giyanto
8 Feb 2017 (Wednesday)	• Discussion and identification • Morphological character of Liriomyza and their parasitod	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
9 Feb 2017 (Thursday)	• Mounting, labelling and Identification specimens	Dr Awit Suwito Mr Darmawan Mr Giyanto
10 Feb 2017 (Friday)	• Mounting, labelling and Identification specimens • Preservation and mounting dried specimens using HMDS (1,1,1,3,3,3-HEXAMETHYLDISILAZANE)	Dr Awit Suwito Mr Darmawan Mr Giyanto
13 Feb 2017 (Monday)	• Mounting, labelling and Identification specimens • Study specimens of liriomyza and parasitic waps morphological character of leafminers and parasitic waps	Dr Awit Suwito Mr Darmawan Mr Giyanto
14 Feb 2017 (Tuesday)	• Disscusion on temporary result on rearing liriomyza and parasitic waps • Identification to liriomyza species and parasitic waps	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
15 Feb 2017 (Wednesday)	• Study specimens collection • Identification to liriomyza species and parasitic waps	Prof Dr Rosichon Dr Awit Suwito
16 Feb 2017 (Thursday)	• Study specimens collection • Identification to liriomyza species and parasitic waps	Prof Dr Rosichon Dr Awit Suwito
17 Feb 2017 (Friday)	• Study specimens collection • Identification to liriomyza species and parasitic waps	Prof Dr Rosichon Dr Awit Suwito
20 Feb 2017 (Monday)	• Study specimens collection • Identification to liriomyza species and parasitic waps • Disscusion on temporary result on rearing liriomyza and	Prof Dr Rosichon Dr Awit Suwito

	parasitic waps	Mr Darmawan Mr Giyanto
21 Feb 2017 (Tuesday)	• Study specimens collection • Capturing image technique using Dino lite digital	Dr Awit Suwito Mr Darmawan
22 Feb 2017 (Wednesday)	• Study specimens collection • Capturing image technique using Dino lite digital	Dr Awit Suwito Mr Darmawan
23 Feb 2017 (Thursday)	• Study specimens collection • Capturing image technique using Dino lite digital	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
24 Feb 2017 (Friday)	• Study specimens collection • Identification to liriomyza species and parasitic waps	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
27 Feb 2017 (Monday)	• Discussion and identification of parasitic waps - Pteromalidae, Fitigidae, Eulophidae	
28 Feb 2017 (Tuesday)	• Study specimens collection • Identification to liriomyza species and parasitic waps • Discussion and identification of parasitic waps - Pteromalidae, Fitigidae, Eulophidae	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
1 Mac 2017 (Wednesday)	• Study specimens collection • Identification to liriomyza species and parasitic waps • Discussion and identification of parasitic waps - Pteromalidae, Fitigidae, Eulophidae	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
2 Mac 2017 (Thursday)	• Study specimens collection • Identification to liriomyza species and parasitic waps • Discussion and identification of parasitic waps - Pteromalidae, Fitigidae, Eulophidae	Prof Dr Rosichon Dr Awit Suwito Mr Darmawan Mr Giyanto
3 Mac 2017 (Friday)	• Disscusion on temporary result on rearing liriomyza and parasitic waps	Prof Dr Rosichon Dr Awit Suwito

6 Mac 2017 (Monday)	• Data analysis and training report	Dr Hari Sutrisno. Dr Awit Suwito
7 Mac 2017 (Tuesday)	• Data analysis and training report	Dr Hari Sutrisno. Dr Awit Suwito
8 Mac 2017 (Wednesday)	• Data analysis and training report	Dr Hari Sutrisno. Dr Awit Suwito
9 Mac 2017 (Thursday)	• Presentation of the result training at MZB	Prof Dr Rosichon Dr Awit Suwito
10 Mac 2017 (Friday)	• Free segment	

Appendix 2. Activity during THE ATTACHMENT PROGRAM

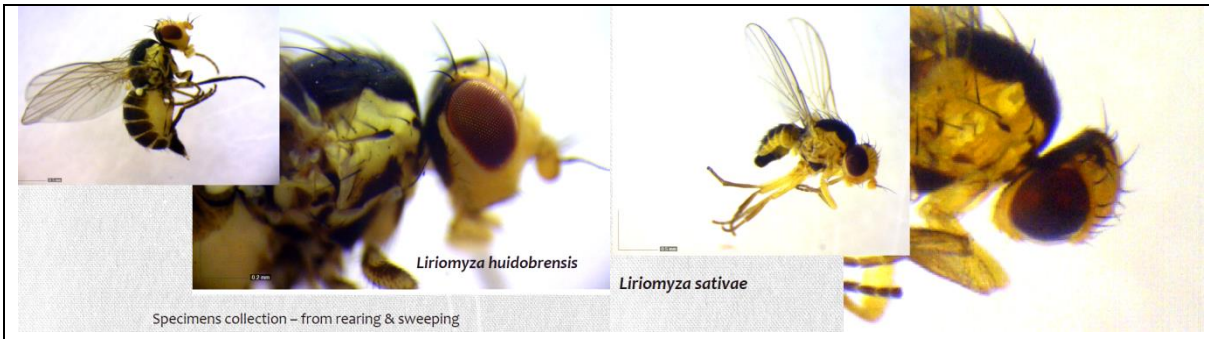
Prof. Ubaidillah, Dr. Awit Suwito and M. Sanusi are engaged in a heated discussion during lecture and preparation of field activities

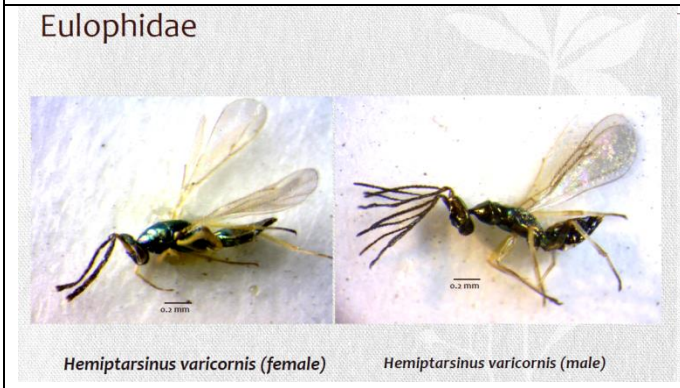
Prof. Ubaidillah, Dr. Awit Suwito,M. Sanusi, Giyanto and Darmawan were fieldwork in

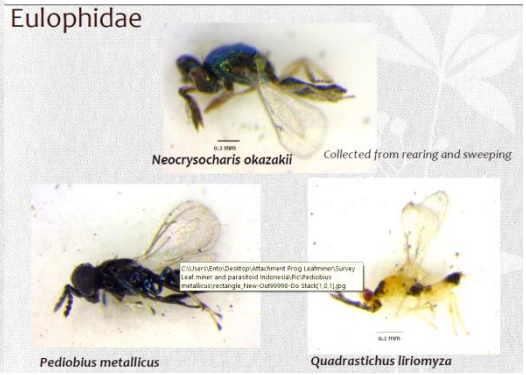
highland of Banjarnegara - Wonosobo, Central Java

Sampling of leafminers and parasitoids in potato gardens and findings many types of pesticides used in the field

Rearing of various leaves which showed infested symptoms of leafminers and its result preserved in dry specimens

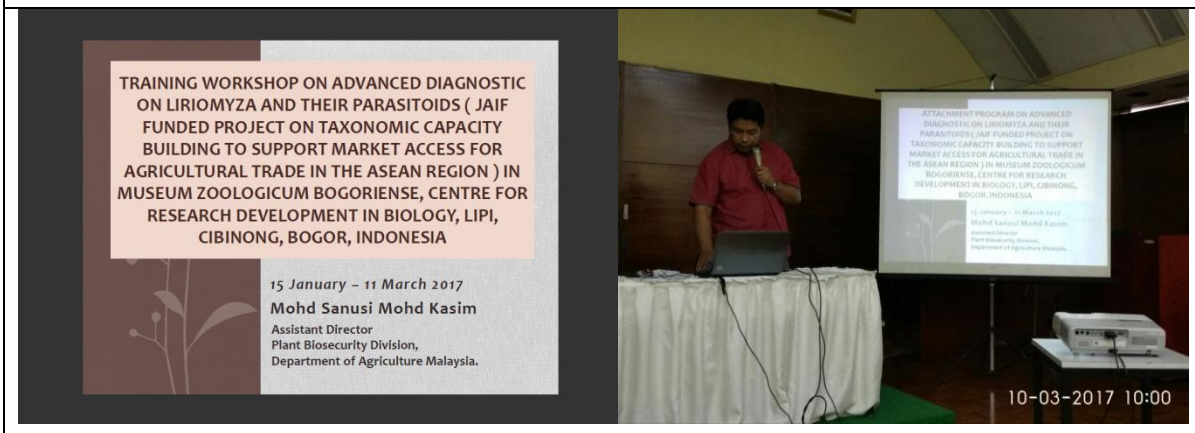






Some image of *Liriomyza* spp. and their parasitoid that emerging from leaves showing symptoms by leafminers .

A moment when Prof. Ubaidillah, Dr.Hari Sutrisno, Dr. Awit Suwito and M. Sanusi together in Entomological Laboratory



The Attachment Program is ended with participant presented his experience and results of the training. Then, finally.....

Certification event.....

We hope this partnership can be continued for the future. Thanks

"Study visit to Japan national SPS/Plant Health laboratories cum Training workshop on the Identification of Fruit Flies"

as a part of the JAIF project phase 1 of "Taxonomic capacity building to support market access for agricultural trade in the ASEAN region"

BACKGROUND INFORMATION & JUSTIFICATION

The ASEAN Plant Health Cooperation Network (APHCN) – ASEANET Project **"Taxonomic capacity building to support market access for agricultural trade in the ASEAN region",** funded by the Japan ASEAN Integration Fund (JAIF) has successfully implemented several activities related to capacity building activities for the ASEAN Plant Quarantine & Plant Protection officers and this project is due to be concluded in April 2017. We are considering proposing a 2nd Phase, based on the recommendations from the 10 ASEAN member countries, to organize more capacity building (mostly Training Workshop on Diagnostics of major pests and diseases for 2 weeks).

One key activity identified as the highest priority to be proposed is a "study visit" to Plant Quarantine & Plant Protection System in Japan to allow ASEAN plant health and quarantine personnel to better understand and appreciate the role played by an efficient plant quarantine system in preventing pest incursions. The National Plant Protection Office of Japan has demonstrated a very efficient plant quarantine and plant protection system in the Asia-Pacific and as a trading partner of ASEAN it is timely that this study visit *cum* training workshop should be organized under the project.

The activity has been planned to offer a hands-on opportunity for senior plant protection and quarantine officials to gain practical knowledge on the efficient operation of a national system in the developed world. This opportunity is not possible through something like to training workshop. Additionally, face-to-face interaction with Japanese personnel will help build relationships that will help in trade-related activities between Japan and ASEAN.

OBJECTIVES:

1. To have an overview on the plant quarantine and plant protection system in Japan
2. To understand the functions and operations of each division under the plant quarantine system of Japan (domestic and international quarantine, export and import divisions, Pest Risk Analysis, etc.)
3. To visit the Research Center, Yokohama & Nara Plant Protection Station
4. To discuss, learn and share field experiences in plant quarantine (inspection, interception, and identification of exotic pests, e.g. fruit flies) from Japanese plant quarantine officers

PARTICIPANTS:

A maximum of twelve senior officers from ASEAN NPPOs and ASEANET (as coordinators) will participate in the study visit. The senior plant quarantine and plant protection officers from the 10 ASEAN countries will be selected by their NPPO/Project Focal Points (one per country). All travel arrangements to Japan would be done by ASEANET and their costs in Japan (food & accommodation, etc.) would be paid by JAIF project, after their approval, through ASEANET.

The candidates who meet one or more of the following criteria would be proposed for consideration:

- Has been in the position of Division/Section/Department Head and or as policy makers
- Minimum with BS degree in biology, agriculture or related field

- Has been working as researcher in entomology or closely related fields for more than 10 years.
- Plant health or quarantine officer involved in insect pest diagnosis and preferably in fruit flies with 10 or more years of experience.
- The successful candidate will have a strong commitment to education and research, excellent communication skills, and the desire and ability to work cooperatively in their own country or in the regional-multi country projects.
- Willing to act as resource person in capacity building for other officers from the ASEAN member states following training.

SPECIFIC OBJECTIVES AND ARRANGEMENTS

1) ***Purpose***: the participants to the training visits will obtain the general idea of how Japan operates its plant protection by visiting several facilities and will be familiarized with fruit flies issues, such as pest risk analysis, ecological research, inspection, diagnostics using molecular technology and other regulatory perspectives.
2) ***Date and duration***: not yet decided (but two weeks period in mid-2017, depending on the availability of people/organizations to be involved)
3) ***Financial issues***: Tokyo University of Agriculture (TUA) will do the necessities of financial issues based on the draft budget from the organizations including PPSs
4) ***Language to be used in the training***: English or Japanese (an interpreter to be hired)
5) ***Guide***: somebody may have to be hired to take the trainee group to various places (e.g. by train and/or micro-bus). The interpreter and the guide could be the same person.

6) Draft budget (see Attachment)

i) Travel costs (overseas and domestic flights, other domestic transportation and accommodation) for trainees, coordinator, interpreter, PPS staff
   a. International air fare from/to Japan and domestic ones between Haneda and Naha
   b. Other domestic transportation (train, micro-bus)

ii) Consumable goods (to be calculated)
   a. TUA
   b. YPPS and NPPS

iii) Interpreter and/or guide

iv) Coordination fee (for TUA), Okinawa prefecture, no charge for YPPS and NPPS

7) Contact persons in Japan:
   - **Ms. Akiko NAGANO**, Deputy Director, Plant Quarantine Office, Ministry of Agriculture, Forestry and Fisheries (MAFF), Phone: +81-3-3502-5978 E-mail: akiko_nagano720@maff.go.jp
   - **Prof. Dr. Keiko NATSUAKI**, Dean, Graduate School of Agriculture, Tokyo University of Agriculture, Sakuragaoka, Setagaya-ku, Tokyo 156-8502, JAPAN, E-mail: keiko@nodai.ac.jp
8) ***First draft of the training visit schedule*** is as below:

Training visit schedule (draft, as of 2 November 2016)

Day	AM	PM	City to stay
1 Sun.		=== > Arrival (Haneda or Narita)	Tokyo
2	Orientation (TUA, Setagaya, Tokyo)	Orientation (continued) Presentation on overview of plant protection in Japan [Reception]	Tokyo
3	Visit to Haneda airport	Haneda to Tsukuba (Post-entry quarantine station) Visit to post-entry quarantine facilities Tsukuba to Yokohama	Yokohama
4	Lectures and practical exercises: classification and identification (Training Center)		Yokohama
5	Lectures and discussions: ecology, control measures and treatments (Training Center)		Yokohama
6	Lectures and practical exercises: diagnosis with molecular technology		Yokohama
7 Sat.			Yokohama
8 Sun.		Yokohama --- > Haneda === > Naha	
9	Overview of plant protection in Naha (eradication history and others)	Visit to the facilities operated by the a Okinawa prefectural government on	Nah
10		Naha === > Haneda --- > Tokyo	Tokyo
11	Lectures at TUA	Lectures at TUA	Tokyo
12	Lectures at TUA	Preparation for the presentation	Tokyo
13	Presentation by the trainee (individually or in groups) at TUA	Presentation by the trainee, for comments from the reviewers followed by general discussions Certificates of training completion [Farewell cocktail]	Tokyo
14 Sat.		Departure (from Haneda or Narita) === >	
15 Sun.			

ASEAN Cooperation Project Document

Project Classification Code:

Project Title: Taxonomic capacity building to support market access for agricultural trade in the ASEAN region – Phase 2

Project Description:

A first two-year project "Taxonomic capacity building to support market access for agricultural trade in the ASEAN region (AGF/CRO/11/007/REG) funded by the Japan ASEAN Integration Fund (JAIF), has drawn positive response from all AMS. At the recently-concluded 18th ASEAN EWG-PS Meeting held in Vientiane, Laos, in 2016, Member States endorsed a proposal to request a second phase to the Project, so that the positive outcomes from the first Project can be built upon to realize safer and smoother trade between ASEAN and its major trading partners. Accordingly, the first proposal for Phase 2 of the Project has been developed and submitted to ASEC in November 2016, to seek continued support from JAIF in this most important SPS-related capacity development initiative from ASEAN. In this project 10 (ten) Training Workshops and 3 (three) attachment programs with the proposed budget of almost US$ 2 million has been proposed. After consultation with JAIF Management Team, ASEC has replied in December 2016 with several comments on the Phase 2 proposal for further revision, improvement and submission. ASEC has also suggested the APHCN-ASEANET to conduct a survey in the AMS especially for ex-participants of the Phase 1 of the Project on the benefits of the project as well the status of their capabilities related to their diagnostics expertise and facilities. ASEC has also indicated that JAIF will only accept the Phase 2 project for one year with a maximum budget of US$ 500,000.- Based on this information, we have prepared the revised proposal with only 2 (two) training workshops and 1 (one) attachment program in Japan.

Three (3) major activities will be undertaken in this project in line with the ARDN Strategic Plan:

Project Activity 1: Training and Capacity Building

As the most significant activity of the project, this component aims to further develop and enhance the capabilities of the ASEAN in detecting and identifying the presence and extent of several major pests and diseases in their country and to reduce the economic impacts caused by the outbreak of such pests. Two (2) training workshops of two weeks duration each with a maximum of 20 participants per workshop would be organized at different ASEAN venues (in Indonesia and Philippines) with Japanese resource persons as the main trainers in collaboration with scientists from the identified ASEAN national host institutions; and 1 (one) attachment programs of 2 months for a total of three selected individuals on plant parasitic nematodes would be organized in Japan.

Project Activity 2: Networking and Institutionalization

To back up Project Activity 1, systematic information sharing, dissemination and mainstreaming/institutionalization of taxonomic knowledge on pests & diseases in the educational and public awareness systems as part of the ARDN will be vital to sustain the

achievements of the project. To achieve this, collaboration, networking and information exchange with objective of establishing simple taxonomic-related information databases between ASEAN nations through the coordination of APHCN/ ASEANET will be established. Tangible outputs and milestones of this activity will include:

2.1 Continued development and population of the expertise register i.e., a database of individual experts and diagnostic laboratories available to the Network (e.g. name of experts, contact details and particular expertise, laboratories that provides diagnostic work and assistance, etc.).

2.2 Maintenance and expansion of the already established website to include, e.g. expert register, major pests & diseases of potential crops in the ASEAN, diagnostic resources and tools, e-application for diagnostic services, etc.

2.3 Continued development, publication and dissemination of promotional materials, e.g. flyers, posters, data-sheets, stickers, standard presentation, etc.

2.4. Publication of selected identification manuals prepared by ASEAN scientists relevant to the projects, at least 5 publications.

Project Activity 3: Management and Coordination

The project shall be implemented, coordinated and managed by APHCN/ASEANET with guidance from the NPPO Malaysia, ASEAN Secretariat through the ASEAN Expert Working Group on Harmonization of Phytosanitary Measures (ASEAN EWG-PS) and the funding agency (JAIF). Networking and collaboration with stakeholders and vital partners will be maintained to strengthen project management and implementation.

The current Project Steering Committee (PSC), consisting of one senior officer from 5 ASEAN countries, i.e. Indonesia, Malaysia, Philippines, Singapore and Vietnam would be maintained with Malaysia as the Chairperson of the PSC and Chairperson of APHCN-ASEANET as the Secretary (ex-officio). One PSC meeting would be organized in the Phase 2 project to monitor and evaluate project preparation and implementation.

Sponsoring ASEAN Body

Sectoral Committee/Main Body:

ASEAN Sectorial Working Group on Crop

Meeting Number/Date: 21-22 July 2016 (23rd Meeting)

Working Group/Sub-Committee:

ASEAN EXPERTS WORKING GROUP ON HARMONIZATION OF PHYTOSANITARY MEASURES

Meeting Number/Date: 18-19 July 2016 (18th Meeting)

Proponent's name and address:

Dr. Lum Keng Yeang
ASEAN Plant Health Cooperation Network (APHCN)
c/o ASEANET, MARDI Complex, P.O. Box 210,
UPM Post Serdang, 43400 Selangor, Malaysia

Date of preparation: 15th September 2016

Revised version:

1st Version of 3 years - 31st October 2016

2nd Version of 1 year - 26th May 2017

Proposed funding source:

Japan ASEAN Integration Fund (JAIF)

Project budget for 1 year

Description	Total Allocation (US$)
1. Project Management	46,930.00
2. Training and Capacity Building	421,448.00
3. Networking and Institutionalization	27,000.00
4. Contingency (10%)	4,622.00
TOTAL	**500.000.00**

Information below to be completed by the PCU

Recommendation of Secretary-General/Project Appraisal Committee

PAC Meeting Number/Date:

Endorsements:

Approval of ASEAN Standing Committee

Meeting Number/Date:

Endorsements:

TAXONOMIC CAPACITY BUILDING TO SUPPORT MARKET ACCESS FOR AGRICULTURAL TRADE IN THE ASEAN REGION – PHASE 2

1. BACKGROUND INFORMATION

This project will develop and strengthen capacities in taxonomic knowledge to identify and manage quarantine risks associated with agricultural commodities and to accurately diagnose pests and diseases among the ASEAN Member States (AMS). Key activities of the project would be in line with the objectives of the ASEAN Regional Diagnostic Network (ARDN) Strategic Plan, an output of the 2009 Workshop on the Planning Meeting of ARDN held in Vientiane, Lao PDR, organized by ASEANET in collaboration with and supported by NZAid-Plant Health and AusAID SPS Capacity Building Programs. The concept of an ARDN has been endorsed repeatedly by the Expert Working Group on the Harmonization of Phytosanitary Measures (EWG-PS) and the ASEAN Sectoral Working Group on Crops (first in Bali, Indonesia in 2005, then in Langkawi, Malaysia in 2007, and in Nay Pyi Daw, Myanmar in 2008). These meetings recommended pilot activities, in particular the development of a list of regional resources (expertise and laboratories) and taxonomic capacity building on several major invasive pest & diseases. The realization of a sustained program of taxonomic capacity development would greatly help ASEAN's drive towards improved knowledge and skills in market access activities with its major trading partners

A first two-year project "Taxonomic capacity building to support market access for agricultural trade in the ASEAN region (AGF/CRO/11/007/REG) funded by the Japan ASEAN Integration Fund (JAIF), has drawn positive response from all AMS. At the recently-concluded 18th ASEAN EWG-PS Meeting held in Vientiane, Laos, in 2016, Member States endorsed a proposal to request a second phase to the Project, so that the positive outcomes from the first Project can be built upon to realize safer and smoother trade between ASEAN and its major trading partners. Accordingly, the first proposal for Phase 2 of the Project has been developed and submitted to ASEC in November 2016, to seek continued support from JAIF in this most important SPS-related capacity development initiative from ASEAN. In this project 10 (ten) Training Workshops and 3 (three) attachment programs with the proposed budget of almost US$ 2 million has been proposed. After consultation with JAIF Management Team, ASEC has replied in December 2016 with several comments on the Phase 2 proposal for further revision, improvement and submission. ASEC has also suggested the APHCN-ASEANET to conduct a survey in the AMS especially for ex-participants of the Phase 1 of the Project on the benefits of the project as well the status of their capabilities related to their diagnostics expertise and facilities. ASEC has also indicated that JAIF will only accept the Phase 2 project for one year with a maximum budget of US$ 500,000.- Based on this information, we have prepared the revised proposal with only 2 (two) training workshops and 1 (one) attachment program in Japan.

2. JUSTIFICATION

Capacity building in diagnostic skills continues to be emphasized in the regional plant health initiatives especially in the ASEAN member economies. This is understandable as the capacity for accurate and timely diagnosis and identification of pests and diseases underpins the development and maintenance of robust pest lists, and provides key skills needed in monitoring and surveillance, and border inspection systems.

During the JAIF Project Steering Committee Meeting *cum* Project Inception Meeting held in Port Dickson, Malaysia in July 2015, the SC members discussed and proposed several activities for prioritizing by the National Plant Protection Offices (NPPOs) of the AMS and to be used in developing Phase 2 of the Project. The compiled list of activities was then

circulated to all NPPOs of the AMS for further prioritizing (Attachment 1) and then it was presented to and endorsed by the 18th ASEAN EWG-PS Meeting held in Vientiane, Laos, in 2016 (Attachment 2).

During the Project Monitoring trip to Japan from 23-28 August we managed to discuss with Prof. K. Natsuaki of Tokyo University of Agriculture and Dr. H. Sato of Nara Women University as well as several potential resource persons for the Phase 2 Project. The most important discussion was on the List of Activities endorsed by the 18th EWG-PS Meeting, especially on the availability of Japanese resource persons to implement these activities. Based on the discussion the revised activities were prepared and used in the Phase 2 proposal, i.e.:

1. Study visit to SPS/Plant Health laboratories and training workshop on identification of fruit flies in Japan
2. Training workshop on diagnostics of plant parasitic nematodes
3. Training workshop on diagnostics of begomovirus and the use of LAMP kit
4. Identification of weed seeds associated with cereal commodities
5. Training workshop on DNA extraction and barcoding
6. Diagnostic protocols/techniques for thrips
7. Training workshop on pest surveillance techniques
8. Pest risk analysis

One of the above activities, i.e. “Study visit to national SPS/Plant Health laboratories and training workshop on identification of fruit flies in Japan” has been submitted to JAIF MT through ASEC for approval by using the unspent budget of the Phase 1 project.

As the indicative budget is only US$ 500,000, this revised proposal will comprise only 2 (two) training workshops and 1 (one) attachment program in Japan, i.e. on:

1. Training workshop on diagnostics of plant parasitic nematodes (in Indonesia)
2. Training workshop on diagnostics of begomovirus and the use of LAMP kit (in the Philippines)
3. Attachment program on diagnostics of plant parasitic nematodes (in Japan)

3. PHASE 1 PROJECT MONITORING & EVALUATION

In compliance with donor requirements for monitoring and evaluation to gauge the success of the above Project, and upon guidance from the ASEAN Secretariat, an output survey was carried out targeting personnel from ASEAN Member States (AMS) who participated in the training events organized under the Project. Where appropriate, Project counterparts have also been contacted for inputs based on the questionnaire prepared (The Guidance Notes and Output Survey Questionnaire are given in the Attachment 3).

The Survey

Three main training activities have been successfully organized under Project funding with the objective of building taxonomic capacity of AMS personnel. Topics for these training events were chosen based on the consensus of the Project Steering Committee; the training events typically consisted of hands-on training in the form of a two-week workshop with participants drawn from AMS. The main objective of this activity is to achieve diagnostic capacity at least at generalist level for the pest taxonomic group targeted. From this training event, three participants who have demonstrated promise at the workshop were selected for a two-month attachment at the laboratories of the designated resource persons/experts for advanced/specialist training.

The three training topics organised were:
1. Diagnostics of Plant Viruses
2. Identification of leafminers of agricultural importance, and

3. Identification of weevils of quarantine importance.

The Response
At the close of the survey period, responses were received from practically all AMS, including ex-workshop participants as well as Project counterparts. The largest number of responses came from ex-participants of the weevils and leafminer training courses. In the case of leafminers, this perhaps reflects in some way, the popularity of the topic or the gravity of the pest problem among AMS. Not unexpected was the fact that the weevils course being the most recently completed, generated good response perhaps because the activity remained fresh in participants' minds. For a similar reason, less response was received for the training course on plants viruses, it being the earliest activity held.

The Feedback

A. Number of trained personnel before the Project, following the training event and after
Respondents appropriately confirmed the increase in personnel able to conduct diagnosis of the target pests and disease (at least at generalist level) following the taxonomic capacity building workshop. Where a country participant was chosen for the more advanced attachment program, this accordingly meant an increase in the number of competent diagnosticians. In practically all cases, respondents expressed confidence that there will be in-country training following the Project which is expected to result in a 'cascading/multiplier' effect of increasing overall taxonomic capacity to address the much-needed support for market access.

B. Number of pest specimens correctly identified
C. Number of specimens deposited in diagnostic laboratories
Respondents reported a significant increase in their ability to identify pest specimens in the target taxonomic group for which they received training. This is followed by a corresponding increase in the number of specimens for these pest groups in their diagnostic collections, thus improving their value as reference resources. Although plant virus diagnosis typically requires more technical resources to facilitate diagnosis, respondents still were able to improve their diagnostic capacity as a result of the training.

A significant observation from the survey were comments that participants improved their ability to identify a larger range of species which have quarantine status in their respective countries. This has been made possible as a result of the training workshop environment, where participants from the diffrerent AMS were ableand continue to share information and specimens with each other and the wider knowledge of the resource person(s).

Some participants already reported that a number of publications have been produced with the benefit of the training received, leading to dissemination of new information.

D. Database/directory of experts
Participants reported an increase in their directory of personnel capable of diagnosis in the target pest groups for which training have been delivered. This, together with the various planned in-country training, would lead to a significant population of diagnosticians worthy of an updated ASEAN database.

E. ARDN website
While the ARDN website is already up, we expect that, as AMS deliver on their planned follow-on activities following the various JAIF training activities as well as in-country training and publications, much more related information (including an updated database of diagnosticians) will be uploaded to the ARDN website.

F. Number of policy recommendations
As the Project has only entered its second year of implementation, the relatively short time frame has yet to yield any policy recommendations based on new taxonomic knowledge and information. It is expected that new surveys and information gathered following this added competency will support any necessary changes/recommendations regarding policy.

G. Number of training course modules/ training manuals developed
Most AMS have indicated that they have made use of the training manuals provided at the workshops and other guides and handouts as the basis for national protocols in the diagnosis of the target pests. In some cases, as in the case for leafminers, the training has enabled national survey plans and factsheets. This is direct evidence of the longer-term impact of the Project and its sustainability.

A few MAS have indicated in-country training course are being planned to extend the newly-acquired skills to other plant protection and quarantine officers in the near future.

H. Information feedback from clients/stakeholders
I. Number of crops exported, volume and value
The two questions did not elicit any responses as they perhaps constitute not so useful indicator in view of short time frame of project. Market access applications take time and are influenced by factors beyond diagnostic capacity.

4. PROJECT COMPONENTS AND ITS ACTIVITIES FOR PHASE 2

Project Activity 1: Training and Capacity Building

1. Training Workshop on Diagnostics of Pest Nematodes

The ASEAN regional training workshop on the Diagnostics of Pest Nematodes will be held in Bogor Agriculture University (IPB), Indonesia in 2017 for 2 weeks. This workshop will focus on the collection, extraction, preparation and identification of pest nematodes. The workshop will also cover the concept of a diagnostic standard and include sessions on the morphology, biology, host specificity, agricultural and quarantine importance of nematodes and their life cycles.

The diagnostic activity directly addresses gaps in SE Asian expertise in relation to groups of pests ("taxa") that are difficult to identify including plant parasitic nematodes. The dire need for competent plant nematode diagnosticians has been highlighted in the ADB-sponsored SPS capacity building program for the Greater Mekong Subregion. This workshop complements and broadens the ADB effort to include other AMS, and provides a foundation for ASEAN countries to improve their regional diagnostic capacity by developing additional skills in the identification of selected groups of plant parasitic nematodes and improving networking among participating plant health professionals. This proposed training workshop to be held in Bogor, Indonesia on the 1st semester of 2018 for 2 weeks.

Japanese Resource Person:
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2. Training Workshop on diagnostics of Begomovirus and the use of LAMP-PCR

Vegetables play a major role in the livelihoods of the rural poor. Among major constraints to vegetable production worldwide are diseases caused by a group of viruses belonging to the genus Begomovirus, family Geminiviridae. Begomoviruses are plant-infecting viruses, which are transmitted by the whitefly vector *Bemisia tabaci* and have been known to cause extreme yield reduction in a number of economically important vegetables around the world. Several begomoviruses have been detected infecting vegetable crops in some if not all ASEAN countries.

This proposed training workshop is to be held at the Institute of Plant Breeding, UPLB Los Banos, Philippines in 2018 for 2 weeks. The objective of the training is to provide basic and practical understanding of the concept of plant viruses, diagnosis of diseased crops infected with economically important genus of Begomovirus, and existing technology and management practices in relation to diseases caused by this genus. The topics to cover include the following: knowledge on the basic classification, morphology of the family of Geminiviridae, its transmission, diagnosis based on symptoms, detection using serological (Enzyme-linked immunosorbent assay, ELISA) and molecular (Polymerase Chain Reaction, PCR) methods, importance of Begomovirus on major agricultural crops in the tropics and sub-tropics, and the available management options in avoiding or suppressing disease development. The knowledge mentioned above will help participants in establishing standard protocols in sampling, handling, processing plants suspected to viruses and identifying major species of the genus, and enable them to design appropriate management strategies.

Japanese Resource Persons:
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3. Attachment program in Japan on Diagnostics of Plant Parasitic Nematodes

An attachment program comprising at least 3 (three) participants from ASEAN countries will be sent to the Faculty of Agriculture, Ryukoku University, Otsu, Shiga, Japan under the supervision of Prof. Dr. Hideaki Iwahori. The participants for the two months attachment program would be selected based on performance evaluation during the training workshop and supported by recommendations by the resource persons.

Project Activity 2: Networking and Institutionalization

In this project activity, the following tasks would be implemented:

2.1 Continue development of the regional expertise register i.e., a database of individual experts and diagnostic laboratories available to the Network (e.g. name of experts, contact details and particular expertise, laboratories that provides diagnostic work and assistance, etc.).

2.2 Maintaining and improving the already established website to include, e.g. expert register, major pests & diseases of potential crops in the ASEAN, diagnostic resources and tools, e-application for diagnostic services, etc.

2.3 Continue developing, publishing and disseminating promotional materials, e.g. flyers, posters, data-sheets, stickers, standard presentation, etc.

2.4. Publishing selected identification manuals prepared by ASEAN scientists relevant to the projects, at least 3 publications.

Project Activity 3: Management and Coordination

One project steering committee would be held during the project, i.e. at the end of the project before the Final Project Report is prepared.

Project monitoring and coordination would be implemented for each activity, especially on the Training Workshops in the form of logistic preparation, visits and coordination with counterpart institutions of the different countries before and during project implementation. One progress report would be prepared within the duration of the project, with one Project Completion Report to be prepared and submitted to JAIF no later than 60 days of the project completion date.

5. PROPOSED BUDGET FOR 1 YEAR

Total proposed budget for one year of Phase 2 is US$ 500,000.- with the following breakdown:

Description	Total Allocation (US$)
1. Project Management	46,930.00
2. Training and Capacity Building	421,448.00
3. Networking and Institutionalization	27,000.00
4. Contingency (10%)	4,622.00
TOTAL	**500.000.00**

The detailed proposed budget for the Phase 2 Project is given in the Attachment 4.