



**Terminal Report on
Training Workshop on Weevils of
Quarantine Importance**

at
The Institute of Weed Science, Entomology and Plant Pathology – UPLB,
Los Baños, Philippines

10 - 22 July, 2017

Organized by:



**Institute of Weed Science, Entomology and
Plant Pathology, UPLB, Los Baños, Philippines**

In Collaboration with:



ASEAN Network on Taxonomy

2017

TERMINAL REPORT



Training Workshop on Diagnostics of Weevils of Quarantine Importance

(PROJECT NO. AGF/CRO/11/007/REG)

IWEP, University of the Philippines Los Baños | 10-22 July 2017

Funded by:

Japan – ASEAN Integration Fund (JAIF)



Through

ASEAN Plant Health Cooperation Network of the ASEANET

(APHCN-ASEANET)



EXECUTIVE SUMMARY

The project entitled “Training Workshop on Diagnostics of Weevils of Quarantine Importance” was facilitated by the Institute of Weed Science, Entomology and Plant Pathology in partnership with ASEAN Plant Health Cooperation Network of ASEANET project on “Taxonomy capacity building to support market access for agricultural trade in the ASEAN region”. The project was funded by Japan-ASEAN Integration Fund (JAIF) with intensive training period conducted from 10-22 of July 2017.

This two-week training program (10-22 July) was participated by 19 quarantine officers in which some of them were working as field quarantine officer or in quarantine laboratories. Participants were from Brunei Darussalam, Cambodia, Indonesia, Laos PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam.

The main objective of this workshop is to provide the participants basic knowledge, understanding, and practical skills on the importance of taxonomy, biology, and ecology of weevils in the context of pest management.

The training course covered the following topics: basic taxonomy, biology, ecology, identification and collection techniques, and basic DNA barcoding techniques of weevils with quarantine importance. Likewise, participants were taught of proper pest management strategies of these weevils.

To fully meet the goal of this training workshop, a combination of 15 interactive lectures including 2 field collections in storage facilities and agricultural farms and 8 laboratory works encompassing the classification, biology, ecology, preservation techniques as well as DNA sequencing of weevils were fully covered.

Post evaluation test were given at the end of the training workshop to fully assess the comprehension and performance of each participants, to determine the effectiveness of the training workshop in meeting the objectives proposed, for further improvement, and to evaluate the organizing team involved.

Session 1. Opening Program and Introduction

The training workshop was opened formally with welcome message led by Dr. Teresita U. Dalisay, IWEPP Director. Shortly after, an introductory message was given by Dr. Soetikno S. Sastroutomo, secretary of ASEANET-APHCN team who provided an overview of the mandate of the training workshop and the expected outcomes in conjunction with the training’s objectives. The 19 participants from ASEAN countries were introduced individually by Dr. Sheryl Yap as well as the resource speakers and members of the training team. After introducing the participants, a group picture were taken at the IWEPP, UPLB commemorating the opening of the awaited workshop.

Lectures were also given by Dr. Hiraku Yoshitake a research scientist for Insect Systematics from the Institute for Agro-Environmental Sciences, NARO Kannondai in which he tackled the classification, biology, ecology as well as economic importance of weevils.

After the lecture, individual presentation of country's reports were presented in which one representative per country briefly introduced the nature of their work, their organization as well as the current status of weevils infestation to their cash crops and what are the necessary precautions their organizations undertook to manage the pest infestation.

Before the day one of the training ends, a welcome dinner for the participants was held at Kamayan, Bay, Laguna to showcase diversity in Filipino cuisines showcasing the famous delicacies in the country like Buko pie (a traditional Filipino baked of young coconut with custard pie) and balut (a developing duck embryo that is boiled and eaten from the shell).



Figure 1. Group photo taken at the IWEP, University of the Philippines, Los Baños, Philippines on July 10, 2017.



Figure 2. Dr. Dalisay delivering the welcome and opening message to the participants.



Figure 3. Dr. Soetikno delivering the mandate of the training workshop to the participants.



Figure 4. Dr. Yap formally introducing the 19 participants, resource speakers and the training team.



Figure 5. Dr. Hiraku Yoshitake delivering his lectures on classification, biology and ecology of weevils.



Figure 6. Dr. Peter Magdaraog (Philippines) delivering country report of weevils infestation for the training workshop.



Figure 7. Welcome dinner reception for the training participants held at Kamayan, Bay, Laguna.



Figure 8. Dr. Yoshitake accepting the Balut eating challenge.

Session 2. Habitus Identification of Weevils using Keys

Morning and afternoon session covered the practical assessment regarding habitus identification of weevils using keys as taught by Dr. Yoshitake. Basically it is an application of the morphology and taxonomy of weevils covered in the previous lectures.

In this session, participants were given 40 specimens of unknown weevils to be identified using a dissecting microscope. Unknown specimens were identified starting from the taxonomic rank order to subfamily level.



Figure 9. Dr. Yoshitake interactively mentoring the participants on identification of unknown weevils using keys.



Figure 10. Dr. Hieu (Vietnam) doing the taxonomic work on the identification of unknown weevils.

Session 3. Weevils in Agricultural Crops

In the morning session, common weevils infesting economically important agricultural crops were discussed by Dr. Celia Medina. These includes common pests of weevils found in banana, sweet potato, coconut, and mango. Dr. Medina also discussed the destructive effect brought by these weevils and the different control measures usually undertaken to control these pest below damaging level. The latter resource speaker also shared her research experience aligned with the topic regarding the possible implications of being heat tolerant of Mango Pulp Weevil as an adaptive mechanism.

Dr. Medina also demonstrated some sample specimens with keys in identifying the sex of the insect either by looking at the genitalia or noting their distinct morphological character differences between males and females.

In the afternoon session, participants were tasked to perform identification of weevils in agricultural crops by using the sample specimen brought by Dr. Medina and her team. Each participants also performed dissection of genitalia.



Figure 11. Dr. Medina discussing the common weevils attacking economically important crops.



Figure 12. Sample specimens of weevils attacking economically important crops brought by Dr. Medina and her team.



Figure 13. Dr. Medina with her team answering queries regarding identification of the sample weevils presented.



Figure 14. Dr. Medina (middle) with her research assistant, Ms. Gena (left) and Mr. Peejay (Right).



Figure 15. Mr. Peejay Rejuso assisting Mr. Rasey (Cambodia) on the identification of weevils in agricultural crops.



Figure 16. Awarding of certificate to Dr. Medina for sharing her expertise on weevils.

Session 4: Field Collection in Storage Facilities

Field trips were basically conducted for the purpose that each participants will have an actual experience on how to collect weevils and for interactive identification of weevils outside laboratory setup.

The first field trip was conducted at the Institute of Plant Breeding (IPB), a forefront institution for plant breeding research and germplasm collection. The participants toured inside a corn storage facility of IPB and were able to have a thorough discussion with the research assistant assigned to the group regarding corn grits and the current infestation rate brought by some weevils on corn. Afterwards, participants were brought in a rearing facility for corn weevils such as *Sitophilus zeamais*. Rearing methods and control methods of the latter insect were discussed with the help of a research assistant assigned on the facility. Shortly after, participants were able to have a first-hand experience of collecting weevils in a corn storage facility.

After the IPB trip, participants visited the Pagkaing Alay sa Mag-Anak na Nagsisikap (PAMANA) which is an organic sensitive vegetable farm. This time, participants were able to have a first-hand contact with the collection of *Cylas formicarius*, a sweet potato infesting weevils using pheromone trapping. The collected sweet potato weevils were put inside of a killing jar or small vials.

After the collection, participants did ocular visit at the IRRRI Riceworld Museum of which is a prime international agricultural research. Rice museum is dedicated in showcasing artifacts concerning rice by describing different ways how rice is grown all throughout the world, different rice products like rice cakes, traditional way of farming

rice. Not only that, the museum also exhibits the important role of rice as cereal in feeding billions of people.



Figure 17. Thorough exchange of discussion regarding corn grits and some weevils infesting corn.



Figure 18. Ms. Ramos (Philippines) viewing the *Sitophilus zeamais* under dissecting microscope at the rearing facility.



Figure 19. Participant's visit at the corn storage facility in IPB, UPLB.



Figure 20. Weevils field collection at the corn storage of IPB.



Figure 21. Dr. Yoshitake (left) and Mr. Crispolon (Right) collecting samples of corn weevils.



Figure 22. Group photograph taken during the trip to Institute of Plant Breeding, UPLB.



Figure 23. Participants collecting some *Cyclas formicarius*, a sweet potato weevil using pheromone trapping at PAMANA, UPLB.



Figure 24. Group picture taken after the trip in PAMANA, UPLB.

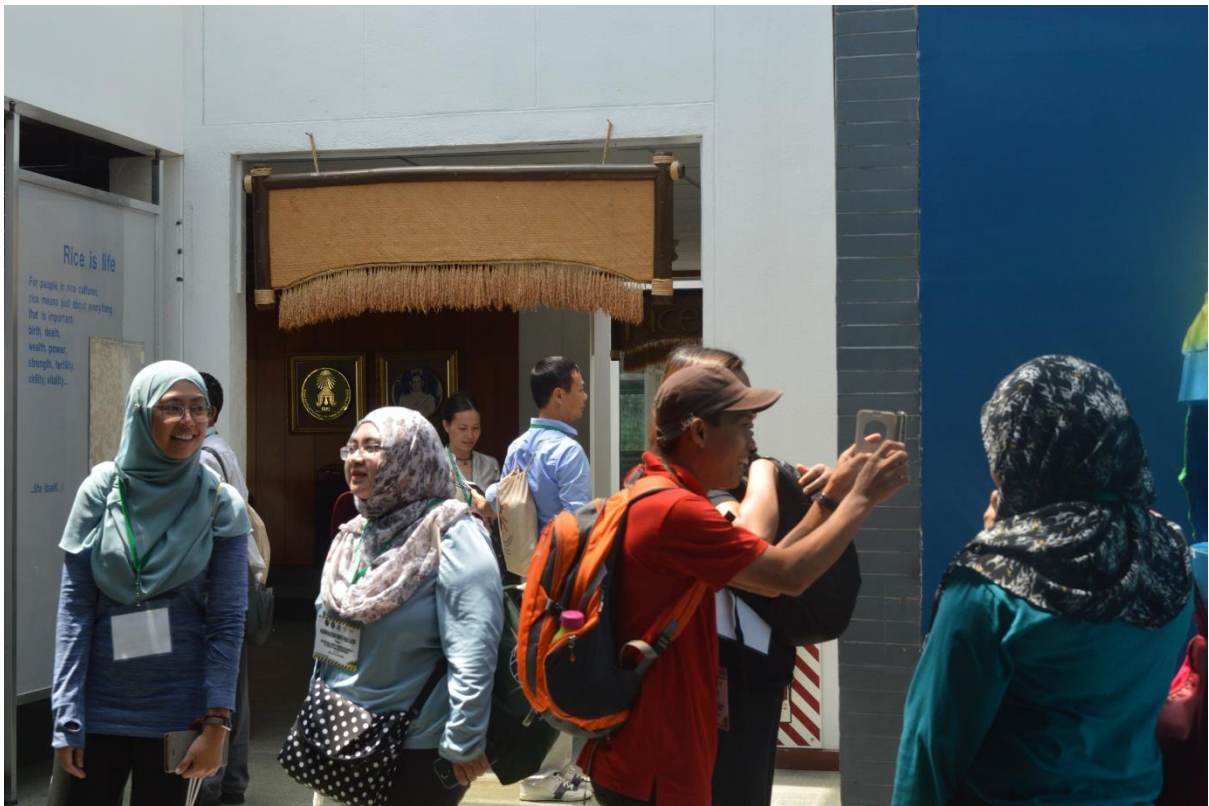


Figure 25. Ocular visit done at the IRRI Riceworld Museum, IRRI, UPLB.



Figure 26. Mr. Rasey (Cambodia), Ms. Vanna (Cambodia), Ms. Thua (Vietnam), Ms. Ramos (Philippines), Ms. Soually (Laos) taking height measurement against deepwater rice plant at the IRRI Riceworld Museum.



Figure 27. Ms. Siti (Malaysia) and Ms. Helwa (Brunei) (from left to right) buying some souvenir at IRRI, UPLB.

Session 5. Field Collection in Agricultural Farms

Before the actual field trip, a quick detour was done at the Entomological museum of the university. Basically, the said museum holds the largest amount of collected arthropods in the country. This includes not only the 6-legged arthropods but as well as its relatives in the family of Acari.

The second field trip was held at APA Farms, Majayjay, Laguna. APA Farms is known for its "Lambanog" wine making, a Filipino alcoholic beverage made from coconut. Not only that, the farm showcases also other products like pure honeybee. The farm is approximately 40 hectares dominated by coconuts, banana and other fruit trees. The farm also have stingless bee farm and cock pen encompassing wide agricultural land.

During this field trip, participants were able to conduct a hands-on collection of weevils infesting important economically crops like those found in coconut, banana, cacao, sweet potato etc. Method of collection was done using sweeping net, vials, killing jar with ethyl acetate, beating sheet and handpicking.

After collection, a lunch was served at the luncheon hall of APA Farm displaying various cuisines and freshly caught fried tilapia which is one of the attractions of the farm. A videoke fun activity followed which is a usual hanging out session of Filipinos.

After lunch, a 30 minutes tour from APA Farm to a vegetable farm was visited. This time, a snap bean farm is being featured as the collection site which involves a 25 minutes of almost 1km walk in a rocky road detour before you can reach the said farm.

This type of farm showcases the traditional farming in the Philippines against the famous vertical farming practice. Participants were then able to conduct the second round of their insect collection.

A short trip to Liliw Laguna, the shoe capital in the province of Laguna were visited by the participants. Participants were then able to do some sightseeing and souvenir shopping with the enigmatic view of Mt. Banahaw and a century old Catholic church.



Figure 28. Mr. Jeremy Naredo (right), curator and expert of the Acari Family introducing the museum to the participants.



Figure 29. Participants during their visit at the entomological museum of IWEP, UPLB.



Figure 30. Trademark logo of APA Farms, Majayjay, Laguna.



Figure 31. Mr. Rasey (Cambodia) doing field work collection on weevils at APA Farms.



Figure 32. Mr. Touy (Laos), Mr. Si Hao (Singapore) and Ms. Sounnaly (Laos) (from left to right) collecting *Cylas formicarius*, a sweet potato weevil.



Figure 33. Dr. Yoshitake and Mrs. Barcial ransacking banana pseudostem for the collection of *Cosmopolites sordidus*, a banana weevil.



Figure 34. Picture taken during lunch at the Luncheon Hall of APA Farms.



Figure 35. Mr. Usman (Indonesia) singing during videoke session at the APA Farms.



Figure 36. Ms. Siti (left) and Ms. Helwa (right) transferring their collected insects on a vial during the collection trip at a vegetable farm in Majayjay, Laguna.



Figure 37. Picture taken during field collection in a vegetable farm at Majayjay, Laguna.



Figure 38. Group photo taken after collection trip at the APA Farms, Majayjay, Laguna.



Figure 39. Sightseeing at the Liliw, Laguna, a shoe capital in Laguna Province.



Figure 40. A century old Catholic church located at Liliw, Laguna.



Figure 41. Mr. Lang Khaw Htang (Myanmar) (left) and Dr. Ko (Myanmar) (right) buying some wallet souvenirs at Liliw, Laguna.

Sightseeing Visit at Tagaytay

For the first weekend experience of the participants in the country, a sightseeing tour in some breathtaking sceneries in Tagaytay were visited by the participants. These includes the cinematic view of Mt. Taal the world's smallest active volcano and People's Park. The participants were then able to visit shopping mall located at the urban sprawl of Manila.



Figure 42. Group photo taken during the sightseeing tour at Mt. Taal in Tagaytay.



Figure 43. Walking detour along the streets of Tagaytay.



Figure 44. Surreal view of Tagaytay taken above.



Figure 45. Tagaytay-Talisay road with some steep sections with serpentine twists and turns.

Session 6. Weevils as Storage Pest and their Control

Some weevils are also a notorious pest of stored grain which makes them a serious suspect for a quality decline of some stored grains. Identification of common storage pest as well its corresponding parasitoid were discussed in this session. Dr. Pio Javier, a research professor led the discussion in which he introduced some common storage pest infesting economically important crops in the country and their morphology and ecology. Not only that, he also discussed the parasitoid used as a biological control agent as one of the methods of control management strategies currently being practiced in the country.

Under this session, participants were expected to identify taxonomically the unknown specimens of some storage pests with the help of dissecting microscope.



Figure 46. Dr. Ko (Myanmar) carefully looking at the morphology of an unknown storage pest.



Figure 47. Mr. Nazri (Malaysia) collecting storage pest for taxonomic identification.



Figure 48. Picture taken during the laboratory work on the identification of storage pest.



Figure 49. Mr. Ittipon (Thailand) (left) and Mr. Magdaraog (Philippines) (right) collecting directly some storage pest.



Figure 50. Awarding of certificate to Dr. Pio Javier for sharing his expertise on storage pest held at IWEPP, UPLB.

Session 7. Preservation techniques

Knowledge on proper preservation of an insect is an essential asset that an entomologist should be fully aware of. Proper preservation techniques should be fully employed especially in identifying unknown insects that can serve as your reference and record for future use.

During this session, lectures regarding preservation techniques of weevils were demonstrated by Dr. Sheryl Yap, an insect taxonomist from University of the Philippines. In this session, Dr. Yap explained the importance of preserving specimens properly. She demonstrated various techniques starting from proper pinning, labelling of specimens (including collection information). Proper maceration using chemicals and genitalia dissection with the use of dead insect bodies. Essential tools used in preservation techniques were also introduced like pinning stage, insect pin, vials, killing jar etc.

Participants are expected to be able to do and master the tasks mentioned above since it is a basic entomological technique.



Figure 51. Sample experimentation setup on the maceration of insect dead bodies using chemicals like KOH.



Figure 52. Participants doing maceration techniques using chemicals like KOH.



Figure 53. Participants cutting some board to make an improvised pinning stage.



Figure 54. Mr. Danai (Thailand) doing proper labelling of an insect sample.



Figure 55. Sample finished output of proper insect labelling done by the participants.

Session 8-9. DNA Sequencing Techniques

Application of molecular approach in taxonomy was introduced by Dr. Barbara Caoili, an insect pathologist professor from University of the Philippines. The approach uses DNA barcodes, as the name implies it works like a barcode found in a Universal Product Code since DNA is uniquely inherent in each species making barcodes distinct.

In this session, lectures regarding proper application of DNA techniques such as extraction of DNA, detection of DNA and sequencing and identification of DNA was introduced. Under this session, 4 practical exercises were conducted that covers 2 day sessions. Protocol regarding DNA extraction were already prepared by the Insect Pathology Lab Team. Expected outcomes are that participants were be able to do proper sequencing up to identification of DNA using different species of weevils.



Figure 56. Dr. Barbara Caoili introducing the lecture outline for DNA techniques lectures.



Figure 57. Ms. Vanna (Cambodia) performing the first step in DNA extraction using pipettor.



Figure 58. Mr. Usman (Indonesia) performing centrifugation to remove protein precipitate.



Figure 59. Group 1 photo taken at the Insect Pathology Laboratory with Ms. Helwa (Brunei), Ms. Thua (Vietnam), Dr. Caoili, Ms. Vanna (Cambodia), Ms. Sounaly (Laos) and Mr. Joni (Indonesia) (from left to right).



Figure 60. Group 2 photo taken at the Insect Pathology Laboratory with Mr. Touy (Laos), Ms. Norkhadijah (Brunei), Mr. Ittipon (Thailand), Mr. Usman (Indonesia) and Mr. Aaron Ogot (Research Assistant).



Figure 61. Group 3 and 4 photo taken at the Insect Pathology Laboratory with Ms. Ramos (Philippines), Mr. Si Hao (Singapore), Mr. Danai (Thailand), Mr. Lang Khaw Htang (Myanmar), Mr. Hieu (Vietnam), Ms. Siti (Malaysia), Dr. Ko (Myanmar).



Figure 62. Awarding of certificate to Dr. Caoili for sharing her expertise on application of molecular approach in taxonomy held at IWEP, UPLB

Session 10. Quarantine Policies

As the coming ASEAN integration, many adjustments should be made. One is to have an effective quarantine policies to prevent unwanted entry of foreign insect pest brought by trading system. In this session, a representative from the Bureau of Plant Industry named Mr. Joselito Antioquia introduced the organization and its functions by showing organizational map structure. The latter speaker also discussed established quarantine laws in the country covering areas of plant quarantine, seed quality control, crop production and protection, and technology development.

Figure 63. Mr. Antioquia introduced the Bureau of Plant Industry to the participants.

Session 11. Resources of Weevils on the Web

If one want to check database of weevils at the ease of time, websites storing data regarding weevils are already accessible at the click of your finger. In this session, Dr. Hiraku led the discussion by giving lists of websites as a legitimate resources for weevils. This includes database on some private/public organization aligned to the study of weevils.



Figure 64. Dr. Hiraku Yoshitake discussing some website resources for the easy access of weevils information

Session 12. Evaluation and Closing Program

To fully assess the comprehension and learnings of each participants, a 1 hour post evaluation tests in a form of an exam were administered covering the lectures taught for two weeks. An evaluation form were also given to assess the effectiveness of the training workshop in fulfilling the proposed objectives as well as the efficiency of the training team.

After the post evaluation test, awarding of certificates to the 19 participants, resource person and training team was held at IWEF Auditorium, UPLB. After the awarding ceremony, social night was held also at the same place to celebrate the ending of training workshop and to build fellowship among the participants as well as the training team.



Figure 65. Dr. Lang Khaw Htang answering the post evaluation test as last required activity during the training workshop.



Figure 66. Awarding of certificates to the 19 participants held at IWEP Auditorium, UPLB.



Figure 67. Awarding of certificate to the resource persons held at the IWEP Auditorium, UPLB.



Figure 68. Videoke session during social night held at IWEP, Auditorium, UPLB.

TERMINAL REPORT

I. BASIC INFORMATION

A. Project Title: Training Workshop on Diagnostics of Weevils of Quarantine Importance

Project Coordination:

- Dr. Lum Keng Yeang, Chairperson, ASEANET-APHCN
- Dr. Soetikno S. Sastroutomo, ASEANET-APHCN
- Dr. Sheryl A. Yap, Regional Training Coordinator/Collaborator (IWEP-UPLB)
- Dr. Priscilla Barcial, Assistant Regional Training Coordinator (IWEP-UPLB)

Resource Persons:

- Dr. Yoshitake Hiraku, Research Scientist, NARO, Kannondai
- Dr. Pio Javier, Research Professor (IWEP, UPLB)
- Dr. Celia dR. Medina, Associate Professor (IWEP-UPLB)
- Dr. Barbara L. Caoili, Professor (IWEP-UPLB)
- Dr. Sheryl A. Yap, Assistant Professor (IWEP-UPLB)

Support Staffs:

- Mr. Aldrin Alvarez
- Mrs. Ira Joey L. Celis
- Ms. Nikka H. Hamor
- Mrs. Ruby Ana P. Laude

B. Proponent and Address

Institute of Weed Science, Entomology and Plant Pathology
College of Agriculture and Food Science
University of the Philippines Los Baños (UPLB)
College, Laguna 4031
Philippines

C. Implementing Agencies

Lead Agencies:

- ASEAN Plant Health Cooperation Network of ASEANET (APHCN-ASEANET)
Building A-19 MARDI Complex, Serdang, Selangor, 43400 Malaysia
- Institute of Weed Science, Entomology and Plant Pathology
College of Agriculture and Food Science
University of the Philippines Los Baños (UPLB)

College, Laguna 4031
Philippines

- Bionet-Aseanet

Funding Agency:

- Japan-ASEAN Integration Fund

D. Project Duration: Two (2) Weeks

- a. Date Project Started: 10 July 2017
- b. Expected Date of Completion: 22 July 2017

E. Period Covered by this Report: 10-22 July 2017

II. Technical Description

A. Background

Weevils are an antagonist group of insects that continuously hamper crop yield translating to severe financial loss to farmers. Not only known of its notorious infestation to a vegetative stage of a crop but also to stored products displaying a wide array of its devastating effect.

As the progressive implementation of ASEAN Integration, threat of potential entry of an "invasive" insect pest is inevitable due to impending influx of imports/exports of economically important crops brought by free-trade system. Thus, preventive measure is an effective forefront management tactics to prevent unwanted entry of this pest.

To further address the issue, correct diagnostic approach of taxonomic classification of an insect and good quarantine policy is an effective measure. Therefore knowledge on taxonomy should be an asset of a good quarantine official since they have a pivotal role of ensuring the future of a country's reputation being free from the unwanted entry of invasive insect pest.

B. Course Description

This workshop is coordinated by the Institute of Weed Science, Entomology and Plant Pathology, College of Agriculture, and Food Science, University of the Philippines Los Banos through the ASEAN Plant Health Cooperation Network (APHCN) of ASEANET project on "Taxonomy capacity building to support market access for agricultural trade in the ASEAN region." This project is funded by the Japan-ASEAN Integration Fund (JAIF) that will be implemented for 2017 covering several activities related to training and attachment programs.

This workshop aims to provide the participants basic knowledge, understanding, and practical skills on the importance of taxonomy, biology, and ecology of weevils in the context of pest management. The training course will cover the following topics: basic taxonomy, biology, ecology, identification and collection techniques, and basic DNA barcoding techniques of weevils with quarantine importance. Likewise, participants will also be taught of proper pest management strategies of these weevils.

C. Objectives

General Objectives

Lecture: At the end of the training, the participants should be able to analyze the importance of controlling or managing weevils, their biology, and ecology.

Laboratory: At the end of the training, the participants should be able to demonstrate basic skills in identifying the species, genera and families of weevils based on morphology and habits, DNA barcoding, collecting, and preservation and labelling of specimens.

Specific Objectives

Lecture:

- 1) To describe the taxonomy, biology, and ecology of weevils with quarantine importance.
- 2) To recognize the importance of weevils in quarantine.
- 3) To discuss that weevils can invade one region to another
- 4) To design appropriate pest management strategies in controlling weevils

Laboratory:

- 1) To describe signs of weevil infestation.
- 2) To identify weevil species based on morphology and DNA barcoding.
- 3) To demonstrate basic techniques in identification, collection in the field, preservation of specimens, and DNA sequencing.

D. Training Course Outline

SESSION 1. OPENING PROGRAM AND INTRODUCTION

- Registration
- Welcome Message
- Introduction and Overview of the Training Course
- Introduction of Participants, Resource Person and Training Team
- Group Photograph
- Lecture 1: Classification, Biology and Ecology of Weevils
- Lecture 2: Economic Importance of Weevils
- Lecture 3: Taxonomy of Weevils

SESSION 2. HABITUS IDENTIFICATION OF WEEVILS

- Lecture: Morphology and terminology
- Practice: Identification of specimens using keys

SESSION 3. WEEVILS IN AGRICULTURAL CROPS

- Lecture: Important weevils attacking economically important crops
- Lecture: Control strategies and management of weevils

SESSION 4 & 5. FIELD COLLECTION IN STORAGE FACILITIES AND AGRICULTURAL AREAS

- Practice: Field observation and sampling
- Practice: Preliminary identification of specimens

SESSION 6. WEEVILS AS STORAGE PESTS AND THEIR CONTROL

- Lecture: Common Storage pests
- Lecture: Control strategies and management of storage pests
- Practice: Identification of storage pests

SESSION 7. COLLECTION AND PRESERVATION TECHNIQUES

- Lecture: Collection and Preservation techniques
- Practice: Demonstration
- Practice: Hands-on work

SESSION 8 & 9. DNA SEQUENCING

- Lecture: Proper DNA techniques and application
- Lecture: Extraction of DNA
- Lecture: Detection of DNA
- Lecture: Sequencing and identification of DNA
- Practice: Demonstration of DNA Techniques
- Practice: Extraction of DNA
- Practice: Detection of DNA
- Practice: Sequencing and identification of DNA

SESSION 10. QUARANTINE POLICIES

- Lecture: Quarantine policies and protocols

SESSION 11. RESOURCES OF WEEVILS ON THE WEB

- Browsing of web sites concerning with weevils

SESSION 12. EVALUATION AND CLOSING PROGRAM

- Post-test evaluation
- Closing Program

E. Training Content and Schedule

Date/Time/Venue	Topic/Activity	Resource Person(s)/Facilitator
Sunday, 09 July 2017		
	Arrival of Participants	Dr. Sheryl A. Yap and Ms. Priscilla M. Barcial, IWEP
Week 1: Monday, 10 July 2017		
Venue: CPC Auditorium	SESSION 1. OPENING AND INTRODUCTION	
08:45 - 09:00	Registration	Ms. Priscilla M. Barcial
09:00 - 09:30	Welcome Address	Dr. Enrico P. Supangco, Dean, College of Agriculture and Food Science
	Opening Remarks	Dr. Teresita U. Dalisay, Director, IWEP
09:30 - 09:40	Workshop Context and Overview	Dr. Sheryl A. Yap
09:40 - 10:00	Introduction of Participants, trainers and training team	
10:00 - 10:15	Group photograph	Mr. JP Aquino, OPR
10:15 - 10:45	Tea/coffee break	
Venue: CPC Auditorium	SESSION 2. CLASSIFICATION, BIOLOGY AND ECOLOGY OF WEEVILS	
10:45 - 12:00	Lecture: Classification, biology and ecology of weevils	Dr. Hiraku Yoshitake, Institute for Agro-Environmental Sciences, NARO
12:00 - 13:00	Lunch break	
13:00 - 14:30	Lecture: Classification, biology and ecology of weevils	
14:30 - 15:00	Lecture: Economic importance of weevils	
15:00 - 15:15	Tea/coffee break	
15:15 - 17:00	Country reports	All participants
Venue: Kamayan sa Palaisdaan	DINNER RECEPTION	All participants Resource persons Training team
Week 1: Tuesday, 11 July 2017		
Venue: Lab room	SESSION 3. HABITUS IDENTIFICATION OF WEEVILS	
09:00 - 10:30	Lecture: Morphology and Taxonomy	Dr. Hiraku Yoshitake

10:30 -10:45	Tea/Coffee break	
10:45 - 12:00	Practice: Identification of specimens using keys	Dr. Hiraku Yoshitake, Dr. Sheryl A. Yap
12:00 - 13:00	Lunch break	
13:00 - 14:45	Practice: Identification of specimens using keys	Dr. Hiraku Yoshitake, Dr. Sheryl A. Yap
14: 45 - 15:00	Tea/coffee break	
15:00 - 17:00	Practice: Identification of specimens using keys	Dr. Hiraku Yoshitake, Dr. Sheryl A. Yap

Week 1: Wednesday, 12 July 2017

Venue: Lab room

SESSION 4. WEEVILS IN AGRICULTURAL CROPS

09:00 - 10:30	Lecture: WEEVILS IN AGRICULTURAL CROPS	Dr. Celia dR. Medina, IWEP
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10:30 -10:45	Tea/Coffee break	
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10:45 - 12:00	Lecture: Control Strategies and Management of Storage pests	Dr. Celia dR. Medina, IWEP
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12:00 - 13:00	Lunch break	
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13:00 - 14:30	Identification of Weevils in agricultural crops	
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14: 30 - 14:45	Tea/coffee break	
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14:45 - 15:45	Identification of Weevils in Agricultural Crops	Dr. Celia dR. Medina, Dr. Hiraku Yoshitake, Dr. Sheryl A. Yap
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15:45 - 17:00	Identification of Weevils in Agricultural Crops	Dr. Celia dR. Medina, Dr. Hiraku Yoshitake, Dr. Sheryl A. Yap
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Week 1: Thursday, 13 July 2017

Venue: Storage facilities
(Industry: Raw materials)

SESSION 5. FIELD COLLECTION IN STORAGE FACILITIES AND AGRICULTURAL AREAS

07:00 - 07:30	Preparation for field trip (Venue: Hotel)	Training team All participants All resource persons
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07:30 - 09:30	Travel from hotel to storage facilities
09:30 - 10:30	Arrival and briefing of the facility
10:30 -11:30	Observation and sampling
11:30 - 13:30	Lunch
13:30 -15:00	Observation and sampling
15:00	Return to Hotel
17:00	Arrival at the hotel

Week 1: Friday, 14 July 2017

Venue: Storage facilities (Agricultural products) **SESSION 5. FIELD COLLECTION IN STORAGE FACILITIES AND AGRICULTURAL AREAS (continued)**

07:00 - 07:30	Preparation for field trip (Venue: Hotel)	Training team All participants All resource persons
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07:30 - 09:30	Travel from hotel to storage facilities
09:30 - 10:30	Arrival and briefing of the facility
10:30 -11:30	Observation and sampling
11:30 - 13:30	Lunch/Prayer for Moslems
13:30AM -15:00	Observation and sampling
15:00	Return to Hotel
17:00	Arrival at the hotel

Week 1: Saturday, 15 July 2017

Venue: Farm areas SESSION 5. FIELD COLLECTION IN STORAGE FACILITIES AND AGRICULTURAL AREAS (continued)

07:00 - 07:30 Preparation for field trip (Venue: Hotel) Training team
All participants
All resource persons

07:30 - 09:30 Travel from hotel to the farm

09:30 - 10:30 Arrival

10:30 -11:30 Observation and sampling

11:30 - 13:30 Lunch

13:30AM -15:00 Observation and sampling

15:00 Return to Hotel

17:00 Arrival at the hotel

Week 1: Sunday, 16 July 2017

REST DAY

Week 2: Monday, 17 July 2017

Venue: Lab room SESSION 6. WEEVILS AS STORAGE PESTS AND THEIR CONTROL

09:00 - 10:30 Lecture: Common Storage pests Dr. Pio A. Javier,

10:30 - 10:45 Tea/Coffee break

10:45 - 12:00 Lecture: Control strategies and management of storage pests

12:00 - 13:00 Lunch break

13:00 - 14:30 Identification of storage pests Dr. Pio A. Javier, Dr. Sheryl A. Yap, Dr. Hiraku Yoshitake

14:30 - 15:00 Tea/Coffee break

15:00 - 17:00	Identification of storage pests	Dr. Pio A. Javier, Dr. Sheryl A. Yap, Dr. Hiraku Yoshitake
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Week 2: Tuesday, 18 July 2017

Venue: Lab room SESSION 7. PRESERVATION TECHNIQUES

09:00 - 10:30	Lecture: Preservation Techniques	Dr. Sheryl A. Yap, IWEP
10:30 - 10:45	Tea/Coffee break	
10:45 - 12:00	Lecture: Preservation Techniques	Dr. Sheryl A. Yap, IWEP
12:00 - 13:00	Lunch break	
13:00 - 14:30	Practice: Demonstration	Dr. Sheryl A. Yap, IWEP
14:30 - 15:00	Tea/Coffee break	
15:00 - 17:00	Practice: Hands-on work	Dr. Sheryl A. Yap, Dr. Hiraku Yoshitake

Week 2: Wednesday, 19 July 2017

SESSION 8. DNA SEQUENCING

9:00 - 10:30	Lecture: DNA techniques and their application	Dr. Barbara L. Caoili, IWEP
10:30 - 10:45	Tea/Coffee break	
10:45 - 12:00	Lecture: Extraction of DNA	
12:00 - 13:00	Lunch break	
13:00 - 14:30	Lecture: Detection of DNA	Dr. Barbara L. Caoili
14:30 - 15:00	Tea/Coffee break	
15:00 - 17:00	Lecture: Sequencing and identification of DNA	Dr. Barbara L. Caoili

Week 2: Thursday, 20 July 2017

SESSION 9. DNA SEQUENCING (continued)

09:00 - 10:30	Practice: Demonstration of DNA Techniques	Dr. Barbara L. Caoili/Insect Path lab team
10:30 - 10:45	Tea/Coffee break	
10:45 - 12:00	Practice: Extraction of DNA	Dr. Barbara L. Caoili/Insect Path lab team
12:00 - 13:00	Lunch break	
13:00 - 14:30	Practice: Detection of DNA	Dr. Barbara L. Caoili/Insect Path lab team
14:30 - 15:00	Tea/Coffee break	
15:00 - 17:00	Practice Sequencing and identification of DNA	Dr. Barbara L. Caoili/Insect Path lab team

Week 2: Friday, 21 July 2017

SESSION 10. QUARANTINE POLICIES

9:00 - 10:30	Lecture: Quarantine policies and protocols	Quarantine officer
10:30 - 10:45	Tea/coffee break	
10:45 - 12:00	SESSION 11. RESOURCES OF WEEVILS ON THE WEB	
	Browsing of web sites concerning with weevils	Dr. Hiraku Yoshitake, Dr. Sheryl A. Yap
12:00 - 13:00	Lunch break	

SESSION 12. EVALUATION AND CLOSING PROGRAM

13:00 - 16:00	Post-test evaluation	Dr. Sheryl A. Yap
14:00 - 14:30	Tea/coffee break	
14:30 - 16:30	Closing remarks	Dr. Hiraku Yoshitake

Information related to Attachment Program	ASEAN representative
Official closing	Dr. Teresita U. Dalisay
Presentation of certificates	Dr. Hiraku Yoshitake
	Dr. Sheryl A. Yap
	Dr. Teresita U. Dalisay
Response from participants	Participant

Week 2: Saturday, 22 July, 2017

DEPARTURE

E. Resource Persons



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F. Training Team



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G. Support Staffs



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H. List of Participants

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K. Participant Groupings

Group 1

Ms. Sounaly Sommany
Ms. Helwa Mazlan
Ms. Hoang Kim Thoa
Ms. Roeun Vanna
Mr. Joni Hidayat

Group 2

Mr. Touy Bouvilayvong
Mr. Mohd Nazri bin Mohd Joha
Mr. Kemas Usman
Mr. Ittipon Bannakan
Ms. Norkhadijah Binti Haji Latip

Group 3

Mr. Chua Si Hao
Mr. Ko Ko
Ms. Jacqueline Ramos
Ms. Siti Aisah Binti Jumaat
Mr. Bui Duc Hieu

Group 4

Mr. Peter Magdaraog
Mr. Chheng Rasey
Mr. Lang Khaw Htang
Mr. Danai Chaireunkaew

L. General Information

Accommodation

Participants were accommodated at BP-International Makiling (El Cielito Hotel).

Meals

Breakfast-complement of the hotel
Snacks and Lunch- served at the training venue
Dinner- at their pleasure and choice except during dinner reception, 21 July 2017

Local Transportation

The training coordinator as well as the support staffs arranged the transportation from Ninoy Aquino International Airport (NAIA) to UPLB as well as back to the NAIA.

UPLB Location/Address

College, Los Banos
4031, Laguna, Philippines

Contact Person

Dr. Sheryl A. Yap
Regional Training Coordinator
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09175959477

Helpful Contact Numbers

Mrs. Priscilla Barcial
Asst. Regional Training Coordinator
09553123863

University Police Force (for emergencies)

II. Methodology

The training was conducted at the Institute of Weed Science, Entomology and Plant Pathology, College of Agriculture, and Food Science, UPLB. Consisting of lectures on the proper identification of weevils of quarantine importance and how to manage them. There were also laboratory or hands-on exercises where participants are exposed to the actual specimens. Likewise, visit(s) to facilities such as warehouses or agricultural field experiment stations was conducted for the participants to have an experience on how to collect weevils.

Basically, the 2 weeks training utilized the interactive lectures, laboratory activities, short demonstration, field tour and collection visit to fully assess the potential of each participants. The entire training course was divided into 11 major sessions such as Session 1. Opening Program and Introduction, Session 2. Habitus Identification of weevils, Session 3. Weevils found in Agricultural Crops, Session 4. Field Collection on storage Facilities, Session 5. Field Collection on Agricultural Farms, Session 6. Weevils as Storage Pests and their Control, Session 7. Collection and Preservation Techniques, Session 8 & 9. DNA Sequencing, Session 10. Quarantine Policies, and Session 11. Resources of Weevils on the Web.

Each session consisted of 2 to 3-hour lectures done prior to 3-hours laboratory activities. Lectures were presented by Dr. Hiraku Yoshitake, Research Scientist for Insect Systematics from Institute for Agro-Environmental Sciences, NARO, Kannondai, Dr. Sheryl Yap from University of the Philippines Los Baños, Laguna, Philippines (IWEF-UPLB), Dr. Celia dR Medina from the University of the Philippines Los Baños, Laguna, Philippines (IWEF-UPLB), Dr. Barbara Caoili from the University of the Philippines Los Baños, Laguna, Philippines, Dr. Pio Javier from the University of the Philippines Los Baños, Laguna, Philippines.

Prior to the training proper, each participant was provided with a Training Workshop Manual (See attached Manual) which includes the training schedules and laboratory protocols. A country report was also initiated to assess the participants' professional background, nature of work and status of quarantine in their country. IPB Corn Storage facilities, IPB PAMANA, UPLB Entomological Museum, and IRRI Rice Museum were showcased.