

POST-WEBINAR REPORT

Biosecurity Threats in Agriculture: *Mitigation, Control, and Management of Fall Armyworm*



MITIGATION, CONTROL, AND MANAGEMENT OF FAW

INTRODUCTION

The Philippines Partnership for Sustainable Agriculture (PPSA) is a multi-stakeholder partnership platform initiated by Grow Asia, a regional platform for inclusive and sustainable agriculture development in Southeast Asia catalyzed by the World Economic Forum and the ASEAN Secretariat. Grow Asia's goal is to reach smallholder farmers in ASEAN through its Country Partnerships like the PPSA to improve farmer incomes, farm productivity, and environmental sustainability. PPSA was formally launched by Grow Asia together with the Philippine Department of Agriculture and through the collective efforts of various stakeholders.

Today, PPSA has brought together more than 70 organizations, reaching more than 100,000 smallholders through commodity Working Groups focused on Coconut, Coffee, Corn, Vegetables, and Fisheries as well as cross-cutting/thematic Working Group on Agri-financing and the Grow Asia Learning Alliance (GALA) program.

The GALA program aims to connect research institutes to agribusinesses in our network with the objective of increasing the application of valuable research findings in agriculture value chains, to scale their development impact. Under the GALA program, with the support from the IDRC, PPSA is holding its Biosecurity Threats in Agriculture Webinar Series, a four-part webinar series that runs from May to June 2020. This webinar series aims to tackle three of biosecurity threats currently present and is affecting our country's smallholder growers, namely – Fall Armyworm, African Swine Fever, and the Avian Flu.

SITUATIONER

The emergence of FAW challenges the agriculture sector as it creates impact to the livelihood of smallholder farmers and to food security. FAW is a destructive, transboundary pest that affects different crops, especially corn. It arrived in Africa in 2016 and has been affecting East and Southeast Asia since then. In Africa, authorities estimated that FAW has affected 300,000 farmers and lost 17.7 million tons of corn annually. FAW reached the Philippines in 2019 which triggered the Bureau of Plant Industry (BPI) to develop the National Fall Armyworm Action Plan. The plan includes monitoring, detection, awareness and capacity building measures, including research and development.

ABOUT THE WEBINAR

The second part of the fall armyworm series centered around practical recommendations for handling the pest in the farms. It presented knowledge and findings from the studies that were conducted on the pest as well as sharing of best practices on how to mitigate, control, manage FAW. We invited representatives from the National Crop Protection Center (NCPC) and East-West Seed to achieve the goals of the discussion.

SPEAKERS' PROFILE

We invited two speakers as we achieved the expected outcome of this webinar.



Mario V. Navasero is a Career Scientist II of the National Crop Protection Center, College of Agriculture and Food Science of the University of the Philippines Los Baños. His research interests include insect taxonomy, biological control, pest management, insecticide management, and pest biology



Teodoro Fortu is the Group Field Quality Manager of East-West Seed. Among his responsibilities, he is the point of contact for the local field inspection teams in case of major seed production issues affecting quality.

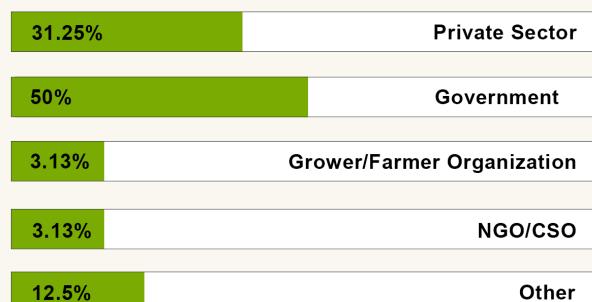
ATTENDEES' PROFILE

The Mitigation, Control, and Management of Fall Armyworm webinar was attended by more than 80 individuals representing different sectors. Majority of these attendees were from the government while private sector, farmer organizations and non-government organizations were well-represented as well.

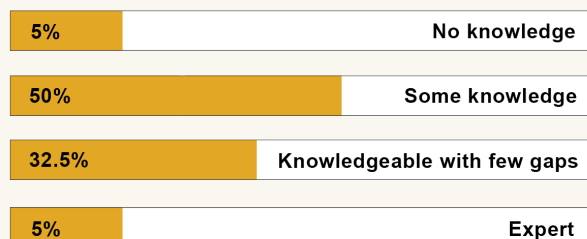
More than half of the participants who attended the webinar are knowledgeable about the pest that made for an interactive, vivid discussion and Q&A session.

See result of poll here:

Representation



Attendees' Knowledge



Q&A DISCUSSION

- Given that the medium to large instars attack the whorl, and are well protected from most insecticide application, shouldn't spraying of insecticides be stopped after the first few weeks?

Navasero:

Most of the available insecticides are usually applied as spray. In our next experiment, we will be trying to modify the application by mixing them with some inert carriers such as sand, powdered lahar or ordinary soil. This is especially true for entomopathogens. With regards to synthetic chemicals, as I have recommended, the spraying should be directed to the whorl when the insects are already at their later stage or when they are hidden inside the whorl. Remember, the structure of the plant may help run down the sprayed chemicals into the whorl and eventually reach the larvae inside the whorl.

- Have there been many reports of major damage on sugarcane in the Philippines?

Navasero:

Sugar cane is one of the crops reported as a host of FAW. But unfortunately, we have gone around here in Luzon and we haven't found it yet in sugarcane. Although, we have received information that in Negros, they already found the infestation of FAW on sugar cane. Meanwhile, in India, infestation report was normally within the range of five percent which is not as serious than in corn.

Fortu:

I must agree with Dr. Navasero. There is no really heavy damage of FAW in sugarcane.

- The proposal for surveillance on other hosts (eg. Sugarcane), when and where are the surveys likely to take place (if funded)?

Navasero:

The project has formally started in February. However, our activities were disturbed because of COVID-19. We will be resuming the surveillance and monitoring in June or once the quarantine is lifted.

- If you use Bt corn, will you be protected from FAW?

Navasero:

As far as we know and as far as our observations are concern, FAW attack only non-Bt corn. The heavy usage of pesticides actually occurred on sweet corn as it is a high-value crop. In Cagayan de Oro, one farmer that we interviewed went as far as spraying three times a day because of the expectation that you can gross Php300,000 per hectare with sweet corn. It really justifies the overuse of insecticides on sweet corn. Three times spraying in a day and mixing with different insecticides is a problem in some areas.

Fortu:

Because Bt corn is infested specifically by *helicoverpa*, there was a report by Syngenta in India

that it offers some kind of protection against FAW, but not that high. Probably, only around 20 to 30 percent.

- **Is nuclear polyhedrosis virus effective for FAW?**

Navasero:

We have been using nuclear polyhedrosis virus (NPV) for cutworm and bit armyworm. We have tested it in the lab against FAW and it is not effective. Although in other countries, there are available nuclear polyhedrosis virus that the government should import. We can import these NPV as the local NPVs that we have is effective for cutworm and bit armyworm and not for FAW.

Fortu:

I must agree with Sir Navasero. We have to know the effectivity of NPV yet in the Philippines for FAW. There are some species of NPV in India whose effectivity is quite high.

- **Has FPA approved the entry of pheromone lures for FAW?**

Navasero:

In one of the researches that we have started, we focused on developing sex pheromone. Our experience was that we tried to import three different sources. The first one, instead of catching FAW, it caught corn semilooper. The next one that we imported, the pheromone attracted FAW. My colleagues went in Taiwan and discovered that Taiwanese were developing their own sex pheromone. From there, we thought of the possibility of developing our own experiment to come up with different blend of different components of pheromone, and find out which among those blends will really be effective against FAW under local condition.

Fortu:

I think we have imported FAW pheromone lures. But we want the government to be less stringent, increase the limit, and expand the purpose other than for research purposes only. We want to import more so that we can help our corn growers.

- **It was mentioned by Navasero that FAW does not attack Bt Corn. How about sweet corn and other consumption corn products of East West Seed? Has East West Seed observed significant FAW infestation in the corn varieties being sold in the market?**

Fortu:

We have reported cases in Mindanao and in the Visayas where there was really heavy infestation of FAW. We are asking the government to help us so that we can also help the farmers. The report in Mindanao showed that the damage was almost close to 80-90%.

- **Do you recommend drone spraying? Have you tried using multispectral imaging using drone for FAW detection?**

Navasero:

In the last portion of my presentation, in one of our setups, we used that to determine the spectral images and the normalized difference vegetation index that we can derive from drone images. It works in our experiment. It works in our experiment because the difference in terms of efficacy of the different treatments are very remarkable. But I don't know if when damage is not as that



remarkable, if that drone system can really differentiate the health status of the plant based on the damage.

Fortu:

Yes, I think we can use drone but for spraying or taking images. In other countries, they are using drones to spray. This will help us in our integrated pest management (IPM) strategy because if drone is being used to spray, we will minimize the damage, and in terms of safety, for hours of spraying. In other countries be countries like developed countries such as the US, they are already using a drone.

• The results of the Q1 2020 production of corn, both for field corn and consumption has just been issued. It was reported that corn production was significantly reduced compared to previous year's figures. While it is said in the report that the fall in corn production was due to reduction in area planted resulting from low prices in previous cropping seasons. In your opinion, does FAW infestation partly explains the fall in corn production during 1st Q 2020?

Navasero:

I think FAW has contributed to the decline in production because in terms of yellow corn, only 50% are actually Bt corn while the rest are non-Bt. So, the other 50% may already may also be affected by FAW. Secondly, even BT corn, ten percent of the seeds are actually refuge non-Bt corn. So, for every hectare of BT corn, 1/10 of that can be actually damaged by FAW. The 50% non-Bt, FAW probably has significant contributions in the decline in production

• Do you know of any government support provided to the farmers in countering FAW?

Navasero:

Last year, government agencies, particularly the Department of Agriculture (DA) and Regional Crop Protection Centers (RCPCs) provided free insecticides to farmers who experienced infestation of FAW. Active information campaign was also launched by DA and Bureau of Plant Industry (BPI).

Fortu:

In terms of information dissemination campaign, I think the government is helping. They are providing some biological control agents in RCPCs. Can you please confirm this, Navasero?

Navasero:

Yes. They are providing *Metarhizium* and earwigs. But so far, we have no evidence yet that these biocontrol agents are really working. Well, it may be contributing but in terms of their efficacy, haven't have any information pointing to that direction.

• Are there any reports of FAW infesting rice?

Navasero:

So far there is no report of FAW infestation on rice.



- Can East-West Seed use any of the insecticides given emergency use permit by the FPA for seed coating?

Navasero:

My understanding is separate registration application is required for specific use of any particular insecticide. Only the method of application stated in the FPA permit will be allowed. You can ask directly the companies if their product(s) can be used for seed dressing but it has to undergo the FPA registration requirements including field bio-efficacy evaluation.

- What was the identified name of the 5th FAW parasitoid in the PH?

Fortu:

Telenomus remus (egg parasitoid)

- Is there a Corn Learning Center in Dipolog-Dapitan-Sergio Osmena?

Fortu:

None yet

CHANNELS



Watch the full webinar on Youtube here:

<https://bit.ly/PPSAYTBFAW2>

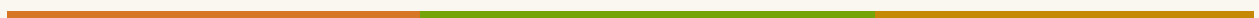
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PRESENTATION DECK

Presentation of the speakers can be downloaded through: <https://bit.ly/PPSAFAW2Deck>.



Agenda

1. Research Study Findings, and Possible Interventions in Handling FAW in the Farm-Level
Mr. Mario Navasero, National Crop Protection Center
2. Corn Learning Centers of East-West Seed: Venue for Farmers Training on Cultural and Integrated Pest Management
Mr. Teodoro Fortu, East-West Seed
1. Q & A
 - Your comments, feedback and questions for the speakers



Mario Navasero
Scientist
National Crop Protection Center
of the University of the Philippines - Los Baños

RESEARCH STUDY FINDINGS, AND POSSIBLE INTERVENTIONS IN HANDLING FAW IN THE FARM LEVEL

Mario V. Navasero
Career Scientist II
NCPC, CAFS, UPLB

PPSA Webinar on Mitigation,
Control and Management of FAW
May 11, 2020

National Crop Protection Center
College of Agriculture and Food Science, University of the Philippines Los Baños
(049) 536-2409 | ncpc.uplb@up.edu.ph

"FAW Awareness Seminar"

March 25, 2019
NCPC, UPLB, College, Laguna



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IDENTIFICATION

First documentation of FAW was
in June 7, 2019 in Piat, Cagayan by
the RCPC II
(identity established based from
one larval specimen sent to NCPC)



Courtesy of Center Chief Ms. Minda Flor Aguino, RCPC II

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IDENTIFICATION

Identity verified through DNA
analysis from additional
specimens

July 30, 2019
U.P. Los Baños
• NCPC and Institute of Weed Science,
Entomology and Plant Pathology
(IWEPP), CAFS, UPLB



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IDENTIFICATION



Spodoptera frugiperda (J.E. Smith)



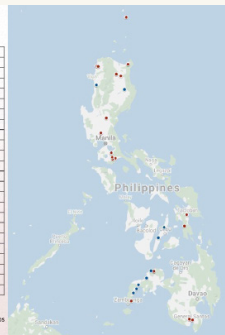
Larvae of other noctuids attacking corn in the
Philippines. a. *Spodoptera exempta*. b. *S. exigua*. c. *S.*
litura. d. *S. mauritia*. e. *Mythimna separata*. f.
Helicoverpa armigera. g. *Chrysodeixis eriosoma*.

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SCOUTING AND SURVEILLANCE

| Date | Province | Town/City | Barangay |
|-----------|--------------|------------|-------------------------------|
| 25-Jul-19 | Ilocos Sur | Bugon | Dayangdi |
| 25-Jul-19 | Ilocos Sur | Bugon | Cababurao |
| 25-Jul-19 | Ilocos Sur | Cawagan | Pantay Zamboaga |
| 25-Jul-19 | Ilocos Norte | Laoag City | Zamboanga |
| 26-Jul-19 | Ilocos Norte | Laoag City | Brgy. 24 |
| 26-Jun-19 | Ishawa | Iligan | San Felipe |
| 07-Jun-19 | Cagayan | Piat | Siciana |
| 08-Jun-19 | Cagayan | Gonzaga | Magrati |
| 07-Jun-19 | Cagayan | Piat | Siciana |
| 20-Jul-19 | Cagayan | Gonzaga | Patal |
| 24-Jul-19 | Cagayan | Sacama | Dessan |
| 25-Jul-19 | Ilocos Norte | Laoag City | Zamboanga |
| 26-Jul-19 | Ilocos Norte | Laoag City | Nuestra Señera de Consolacion |
| 30-Jul-19 | Neura Lila | San Jose | Palatino |
| 14-Aug-19 | Batanes | Basco | Binhok 1 |
| 26-Aug-19 | Batangas | San Juan | Jatani-Jatani |
| 28-Aug-19 | Quezon | Candilera | Matlabanan |
| 02-Sep-19 | Quezon | Tinigon | Kipot |
| 02-Sep-19 | Quezon | Tinigon | Ayuan |
| 05-Sep-19 | Cebu | Burill | Bolobolob |
| 05-Sep-19 | Cebu | Asturias | Banban |
| 10-Sep-19 | Laguna | Jay | Tranca |
| 16-Sep-19 | Laguna | Los Banos | College |

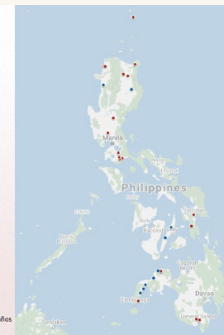
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SCOUTING AND SURVEILLANCE

| | | | |
|-----------|---------------------|---------------------|---------------|
| 17-Sep-19 | Zamboanga del Norte | Dipolog City | Punta |
| 17-Sep-19 | Zamboanga del Norte | Katipunan | Duang Longood |
| 17-Sep-19 | Zamboanga del Norte | Katipunan | Duang Longood |
| 17-Sep-19 | Zamboanga del Norte | Manukan | Lingay |
| 17-Sep-19 | Zamboanga del Norte | Sinandangan | Lingay |
| 17-Sep-19 | Zamboanga Sibuyan | Titay | Pobocion |
| 17-Sep-19 | Zamboanga Sibuyan | Roseller Lim | Pres. Rosas |
| 17-Sep-19 | Zamboanga del Sur | Zamboanga City | Larom |
| 17-Sep-19 | Zamboanga del Sur | Zamboanga City | Sengali |
| 19-Sep-19 | South Cotabato | Polenolok | Magayay |
| 19-Sep-19 | South Cotabato | Polenolok | Magayay |
| 19-Sep-19 | South Cotabato | Baybay City | Hibsanwan |
| 19-Sep-19 | Leyte | Sta. Pa | Copar |
| 01-Oct-19 | South Cotabato | General Santos City | Katangawan |
| 25-Feb-20 | Pampanga | Mexico | San Patricio |

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BIOLOGICAL STUDIES

Durations (in days) of the different developmental stages of male and female *S. frugiperda* fed on leaves of corn under laboratory condition.

| DEVELOPMENTAL STAGE | DURATION (MEAN±SD) | |
|--|--------------------|-------------|
| | MALE | FEMALE |
| Egg | | 2-3 |
| Larva | | |
| First instar | 2.28±0.45a | 2.40±0.49a |
| Second instar | 2.20±0.40a | 2.30±0.54a |
| Third instar | 1.45±0.60a | 1.37±0.49a |
| Fourth instar | 1.49±0.72a | 1.50±0.73a |
| Fifth instar | 2.31±0.57a | 2.20±0.48a |
| Sixth instar | 3.95±0.73a | 3.75±0.85a |
| Pre-Pupa | 1.08±0.28a | 1.10±0.31a |
| Total Larval Period | 14.73±1.72a | 14.40±1.90a |
| Pupa | 9.00±0.70b | 8.50±0.86a |
| Total Developmental Period (Egg-Adult) | 25.73±1.75a | 24.90±1.83a |

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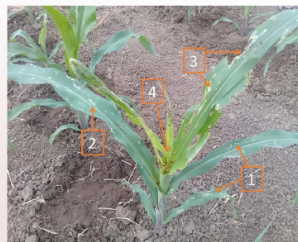
BIOLOGICAL STUDIES



Damage of *S. frugiperda* on different growth stages of corn.
a. high infestation of 2nd to 3rd instars in a field 12 days after sowing.
b. early whorl stage.
c. mid-whorl stage.
d. on ear.
e. on tassel.

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BIOLOGICAL STUDIES



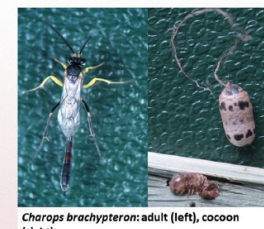
Characteristic damage of different larval instars:
1 - first instar
2 - second instar
3 - third to fourth instar
4 - late instars

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BIOLOGICAL STUDIES



Chelonus sp.



Charops brachypteron: adult (left), cocoon (right)

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BIOLOGICAL STUDIES



Two species of tachinid parasitoids

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BIOLOGICAL STUDIES



Mermithid Nematode

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BIOLOGICAL STUDIES

Metarhizium rileyi



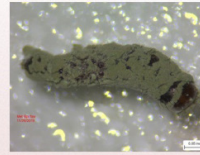
Natural epizootic of 20% was documented in one site



Laboratory induced infection on larvae of FAW

EVALUATION OF ENTOMOPATHOGENS

Other entomogenous fungi evaluated under laboratory condition



Metarhizium anisopliae

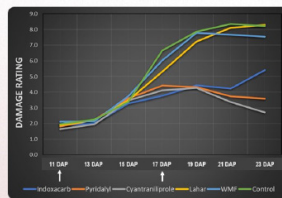


Beauveria bassiana

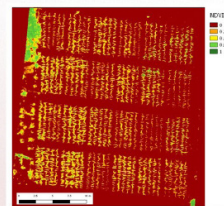
FIELD EVALUATION OF INSECTICIDES AND BCA, ETC.

TRENDS

- Better performance of synthetic insecticides
- Improving bioefficacy of *B. bassiana*

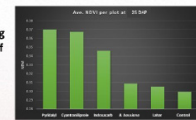


FIELD EVALUATION OF INSECTICIDES AND BCA, ETC.



Multispectral aerial image, rendered to represent Normalized Difference Vegetation Index (NDVI) values.

Comparison of NDVI values of treatments.



Comparison of leaf surface area.



Insecticides granted emergency use permit by the FPA

| MODE OF ACTION | ACTIVE INGREDIENT | PRODUCT NAME | TOXICITY CATEGORY | MODE OF ENTRY | RECOMMENDED RATE |
|----------------|--------------------------------------|------------------|-------------------|---|------------------------|
| 1A | Carbosulfan | Marshall 200 SC | 2 | systemic with contact and stomach action | 20-40 ml product/16L |
| 1A | Lambdacyhalothrin | ARI BA 2.5 EC | 2 | contact, stomach and ovicidal action | 2 L/16L |
| 5 | Spinetoram | EXALT 60 SC | 4 | contact and ingestion | 500 ml product/ha |
| 6 | Emamectin benzoate | Prodim Opti 5 WG | 3 | ingestion, penetrate leaf, sensitive to sunlight | 25 g/16L |
| 11A | Bacillus thuringiensis var. aizawai | Actron WDG | 4 | ingestion | 10-20 g/16L |
| 11A | Bacillus thuringiensis var. kurstaki | Dipel WP | 4 | ingestion | 50 g/16L |
| 15 | Chlorfluazuron | Bioltrion 5 F | 4 | anti moulting agent | 20-40 ml/16L |
| 15 | Lufenuron | Match 050 EC | 4 | anti moulting agent | 0.60-0.80 L product/ha |
| 22A | Indoxacarb | Annimate 15 EC | 2 | contact and stomach | 10-15 ml/16L |
| 22A | Indoxacarb | Steward 30 WDG | 3 | contact and stomach | 4 g/16L |
| 28 | Tetraniliprole | Yermal SC 200 | 3 | systemic and contact | 6-8 ml/16L |
| 28 | Chlorantraniliprole | Prevation 5 SC | 4 | primarily by ingestion and secondarily by contact | 30-40 ml/16L |
| 28 | Cyantamiprole | Benevia OD | 4 | primarily by ingestion and secondarily by contact | 6.7 ml/16L |
| 28/1A | Chlorantraniliprole + Thiamethoxam | Virtako 40 WG | 4 | feeding stage a few hrs after exposure but death may take 3-6 d | 150-200 g product/ha |
| 28/1A | Pyridalyl | Pho 10 EC | 4 | contact | 40-60 ml product/16L |



- Highly toxic insecticide (category 2) should be used only in the early growth stages (up to early-whorl) for safety to the applicator
- Practice spot application if applicable
- Direct spray to the whorl for contact insecticide
- Use Insect Growth Regulator (IGR) only when larvae are its early instars
- Spray late in the afternoon for insecticides sensitive to sunlight/UV
- Alternate different MOA
- Do not use the same MOA beyond 2 weeks (will need at least 3)

ON-GOING RESEARCHES

- Biological Control of Fall Armyworm (FAW) *Spodoptera frugiperda* (J. E. Smith) (Lepidoptera: Noctuidae) Using Entomopathogens
- Identification and Evaluation of Natural Enemies against Fall Armyworm (FAW) *Spodoptera frugiperda* (J. E. Smith) (Lepidoptera: Noctuidae)
- Insecticide Management and Susceptibility Studies on Fall Armyworm (FAW) *Spodoptera frugiperda* (J. E. Smith) (Lepidoptera: Noctuidae)
- Development of an Early Warning System against Fall Armyworm (FAW) *Spodoptera frugiperda* through Phenology and Distribution Modelling
- Effect of Temperature and Host Plants on the Life History Traits of *Spodoptera frugiperda* (J. E. Smith) (Lepidoptera: Noctuidae)
- Structure and Morphological Variation Analysis of the Fall Armyworm (FAW) *Spodoptera frugiperda* (J. E. Smith) (Lepidoptera: Noctuidae) in the Philippines

RESEARCH PROPOSALS UNDER REVIEW

- Surveillance of FAW on Rice, Sugarcane, Turf, and High-Risk Vegetables
- Strain Identification and Genetic Diversity of FAW on Rice, Sugarcane, Turf, and High-Risk Vegetables
- Characterization, mass production, formulation, and utilization of *Metarhizium* sp. for increased potency against fall armyworm, *Spodoptera frugiperda* (J.E. Smith)
- Development of pheromone traps for the Monitoring of fall armyworm, *Spodoptera frugiperda* (J.E. Smith), and onion armyworm, *S. exigua* (Hübner) (Noctuidae, Lepidoptera)



Teodoro Fortu
Group Field Quality Manager
East-West Seed



Corn Learning Centers of East-West Seed: Venue for Farmers Training on Cultural and Integrated Pest Management



Teodoro F. Fortu (Group Field Quality Manager/Entomologist) and Jedeliza B. Ferrater (Entomologist)



Overview

Issues confronted by farmers based on nationwide survey:

- Lack of Crop Cultural/Production Practices Guide
- Pests and Diseases

Corn Learning Centers were established to provide:

- Information on corn production, cultural and pest management
- Hands-on training/workshop on farmers field
- Based on "to see is to believe and to implement" concept



www.eastwestseed.com



www.eastwestseed.com

Nationwide Corn Learning Centers Venue

| 2019 | 2020 |
|-----------------------------|---------------------------|
| 1. Bayawan, Negros Oriental | 1. Tuguegarao City |
| 2. Surigao City | 2. Lamut, Ifugao |
| 3. Bangued, Abra | 3. Sta. Teresita, Cagayan |
| 4. Diadi, Nueva Vizcaya | 4. Tumauini, Isabela |
| 5. Aglipay, Quirino | |
| 6. Tubod, Lanao | |
| 7. Mahayag, Zamboanga | |
| 8. Baler, Aurora | |
| 9. Aklan | |



www.eastwestseed.com

CLC On-field Training on Corn Production

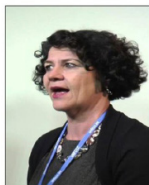


www.eastwestseed.com

CLC Lectures- Diseases and FAW Management



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Dr. Janny de Vos
Strategic Partnerships Director, CABI Netherlands

EWS Entomologist Jedeliza Ferrater in communication with CABI NL Director on Fall Armyworm Updates at the CABI Portal (November 2019) - needs updated info for our farmers



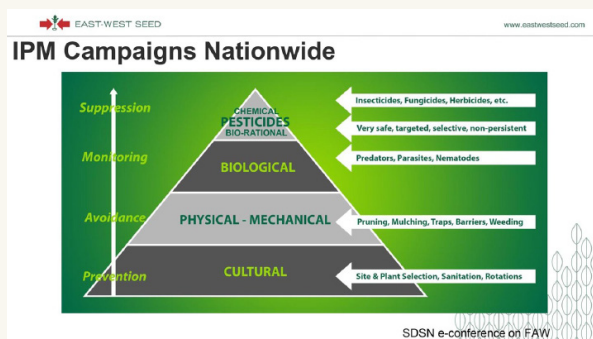
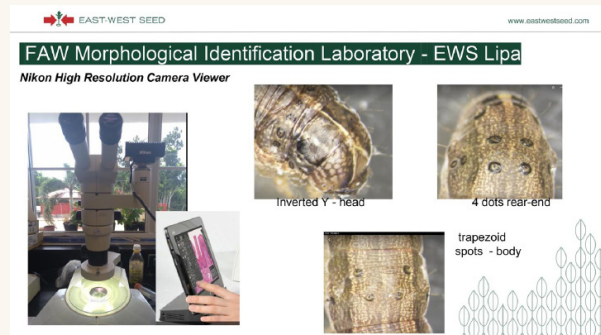
www.eastwestseed.com

Production of FAW Materials in Various Dialects

- English
- Tagalog
- Bisaya
- Ilocano



TIP: In order for awareness campaigns to work, and Integrated Pest Management to be implemented by farmers, all materials should be relatable, colorful and animated with live demo during farmers seminars



EAST-WEST SEED Insecticide Use Guide www.eastwestseed.com

Download IRAC app on devices

Highly recommended to use 3 modes of action in a cropping season

ACTIVE INGREDIENT:
Bacillus thuringiensis (3-3-(2-chlorophenyl) methyl (2-cis/trans 3-(2,2-dichloroethyl)-2-dimethylpyridinecarboxylate) 2.5%

OTHER INGREDIENTS 97.5%

Total 100.0%

*cis/trans isomer ratio: Min 35% (±) cis
Max 65% (±) trans

**KEEP OUT OF REACH OF CHILDREN
CAUTION**
See Booklet For Additional
Precautionary Statements

Active Ingredients **% By Weight**

imidacloprid 9.10%

Acetamiprid 9.44%

Other Ingredients 90.44%

Total 100.00%

Net Contents: 6 Tubes, each 9.027 fl oz (0.8 mL)

EAST-WEST SEED FAW Awareness Campaigns -2019-2020 www.eastwestseed.com

| Location | Month/Year | EWS Staff Involved | Event |
|---|----------------|--------------------|------------------------|
| 1. Surigao City | June 2019 | Jedeliza Ferrater | Corn Learning Center |
| 2. Pidigan, Abra | August 2019 | Jedeliza Ferrater | Corn Learning Center |
| 3. Diadi, Nueva Vizcaya | | | |
| 4. Baler, Aurora | September 2019 | Jun Ramos | Corn Learning Center |
| 5. Sta. Maria, Pangasinan | September 2019 | Jun Ramos | EWS Integrated Event |
| 6. Antique | | | |
| 7. Phil Seed Industry Association, Manila | | | PSIA Quarterly Meeting |
| 8. Lantapan, Bukidnon | October 2019 | Jedeliza Ferrater | LGU Farmers Meeting |
| 9. Tubod, Lanao | October 2019 | Nova Corbita | |

EAST-WEST SEED FAW Awareness Campaigns -2019-2020 www.eastwestseed.com


| Location | Month/Year | Staff Involved | Event |
|----------------------------|--------------|-------------------------|---------------------------|
| 17. Sta. Maria, Ilocos Sur | January 2020 | Jeanne Pauline Bocalere | Farmers Meeting on FAW |
| 18. Asingan, Pangasinan | January 2020 | Jeanne Pauline Bocalere | |
| 19. Pidigan, Abra | January 2020 | Jun Ramos | Phytosanitary Field Visit |
| 20. Pototan, Iloilo | January 2020 | Jedeliza Ferrater | EWS/LGU Farmers Meeting |



- EAST-WEST SEED EWS follows NCPC IPM Recommendation for FAW www.eastwestseed.com
- EWS follows NCPC IPM Recommendation for FAW**
- Cultural Practices**
 - Ploughing under corn stubbles after harvest
 - Strictly follow synchronous planting
 - Weed management (sanitation)
 - Handpicking
 - Biological Control**
 - Release *Trichogramma chilonis* for egg masses
 - Release Earwigs, *Euborella* sp (7, 14, 21 DAP)
 - Spray *Metarhizium* sp (14, 21, 28 DAP)
 - Chemical Control**
 - Apply recommended insecticides with contact and stomach activity following the manufacturers recommendation

FPA Recommendation for FAW

1. AMMATE 15 EC (Indoxacarb, Group 22)
2. ARIBA 2.5 EC (lambda-Cyhalothrin, Group 3)
3. ATABRON 5 E (Chlorfluazuron, Group 15)
4. AZTRON WDG (B. thuringiensis, Group 11A)
5. BENEVA (Cytraniliprole, Group 28)
6. DIPEL WP (Bacillus thuringiensis kurztaki, Group 11A)
7. EXALT 60 SC (Spinetoram, Group 5)
8. FALL ARMY-LURE (pheromone)
9. MARSHALL 200 SC (Carbosulfan, Group 1A)
10. MATCH 050 EC (Lufenuron, Group 15)
11. MON 89034 (YIELD GARD 2) - Bt corn
12. PLEO 10 EC (Pyridalyl, Unknown MOA)
13. PREVATHON EC (Chlorantraniliprole, Group 28)
14. PROCLAIM OPTI 5 WG (Emamectin, Group 6)
15. SPODO-LURE (pheromone)
16. STEWARD 30 WDG (Indoxacarb, Group 22)
17. VIRTAKO 40 WDG ((Thiamethoxam +Chlorantraniliprole, Group 4A + Group 28)
18. YEOVAL SC 200 (Tetraniliprole, Group 28)



Importation of FAW Pheromones
Requesting FPA and BPI to make FAW pheromone importation less stringent

Pherobank Quotation

No. 2019082701 Date: 27 August 2019


| Art. No. | description | number required | price apiece | total price |
|---|-----------------------|-----------------|------------------------|-------------------|
| 50197 | Spodoptera frugiperda | 300 | EUR 1.50 | EUR 450.00 |
| | | | Php78 per piece | |
| * Shipment: CPT your address (incoterms 2010) | | | | EUR 45.00 |
| total value of this quotation: | | | | EUR 495.00 |

Public-Private Partnerships in FAW Control

- FARMERS
- LGUs
- DA-RCPC
- DA-BPI
- STATE UNIVERSITIES
- PRIVATE SECTOR
- NGOs

→ **FALL ARMYWORM**

Nationwide Action Plan All Sectors for FAW Control



- 17 Regions (17 **Regional Crop Protection Centers** nationwide)
- 1488 Municipalities or Local government units (Target corn LGUs - priority)
- EWS can help FAW awareness and IPM campaigns at LGU level
- LGUs should be strengthened as hub for FAW information and immediate action of control

farmers/field technicians → LGUs/BPI IPM Adviser → IPM Implementation at farm level

Thank You!

"Chemical application is not the only solution"

"Let's promote IPM!"

"Multisectoral or PPP in FAW Control"



PPSA Biosecurity Threats in Agriculture webinar series

HOW DO WE RECOVER FROM THE IMPACTS OF AFRICAN SWINE FEVER?

PPSA Biosecurity Threats in Agriculture webinar series

PREVENTION AND MITIGATION OF AVIAN FLU

MAY 28, 2020 | 2pm - 3pm (GMT +8)

JUNE 4, 2020 | 2pm - 3pm (GMT +8)

GrowAsia PPSA

Thank You

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www.growasia.org

www.ppsaph.org

PPSA Biosecurity Threats in Agriculture webinar series

MITIGATION, CONTROL, AND MANAGEMENT OF FAW

May 11, 2020 | 2PM-3PM

PPSA GrowAsia IDRC/CRDI Carver Trust

NEXT IN THE BIOSECURITY THREATS IN AGRICULTURE WEBINAR SERIES



PPSA Biosecurity Threats
in Agriculture webinar series

HOW DO WE RECOVER
FROM THE IMPACTS OF
AFRICAN SWINE FEVER?

May 28, 2020 | 2pm-3pm (GMT+8)

Register here: <https://bit.ly/PPSAASF>



PPSA Biosecurity Threats
in Agriculture webinar series

PREVENTION AND
MITIGATION OF AVIAN FLU

JUNE 4, 2020 | 2pm-3pm (GMT+8)

Register here: <https://bit.ly/PPSAAvianFlu>

About PPSA



The Philippines Partnership for Sustainable Agriculture (PPSA) is a multi-stakeholder partnership platform initiated by Grow Asia, a regional platform for inclusive and sustainable agriculture development in Southeast Asia catalyzed by the World Economic Forum and the ASEAN Secretariat. Grow Asia's goal is to reach smallholder farmers in ASEAN through its Country Partnerships like the PPSA to improve farmer incomes, farm productivity, and environmental sustainability. PPSA was formally launched by Grow Asia together with the Philippine Department of Agriculture and through the collective efforts of various stakeholders.

Today, PPSA has brought together more than 70 organizations, reaching more than 100,000 smallholders through commodity Working Groups focused on Coconut, Coffee, Corn, Vegetables, and Fisheries as well as cross-cutting/thematic Working Group on Agri-financing and the Grow Asia Learning Alliance (GALA) program.

About Grow Asia



Grow Asia was established by the World Economic Forum in collaboration with the ASEAN Secretariat, to convene, facilitate and help scale action-focused partnerships in Southeast Asia. Our goal is to lift smallholder productivity, profitability and environmental sustainability.

