Food Security Cluster Workshop on Fall Armyworm (FAW) and Lumpy Skin Disease (LSD) Outbreak Linked to Agricultural Emergency

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19 January 2020
1. Background information
   ➢ Fall armyworm invasion – Bangladesh

2. Economic importance of fall armyworm
   ➢ Threat to agricultural stability
   ➢ Yield losses

3. Interventions and achievements
   ➢ Activities carried out
   ➢ Outcomes

4. Sustainable management initiatives
   ➢ Sustaining action plan
   ➢ Addressing knowledge & technological gaps
Disasters can be broadly classified into two groups:

Natural disasters
Manmade disasters

Affect food production, food security, food chain crises and people's livelihoods.

**Natural disasters:** Between 2005 and 2015
- $96 billion in damaged or lost crop & livestock production.
  Half of that damage $48 billion worth – occurred in Asia

**Manmade disasters:** A first case study done on the impacts of conflict in Syria.
- cost of damage and loss in agriculture sector was at least $16 billion (2011–2016).
Transboundary plant pests and diseases affect food crops, causing significant losses to farmers and threatening food security.

Transboundary plant pests and diseases can easily spread to several countries and reach epidemic proportions.

Outbreaks and upsurges can cause huge losses to crops and pastures, threatening the livelihoods of vulnerable farmers and the food and nutrition security of millions at a time.
Fall armyworm (FAW) having a preference for maize and other cereals, an outbreak threatens to further undermine the food security of families that can ill afford another crisis.

- The pest is known to cause **100 percent crop losses**.

- The FAW has **affected the grain basket of Kenya** and hence can lead to serious food shortage in the country.
Fall Armyworm Description

Fall armyworm (FAW), *Spodoptera frugiperda*, is a plant pest with larvae (caterpillars) as the destructive stage.
The spread of FAW since 2016 (as of July 2019)

SOURCE: FAO, 2019
Environment of Bangladesh is very much suitable for FAW infestation and outbreak.
Fall Armyworm is Invasive and Migratory

Rapid spread in Bangladesh

November 18 – June 19
Increase in Infested Areas
Economic Importance of Fall Armyworm
Fall armyworm has affected agricultural balance

Reduce losses and costs caused by pests, diseases & other factors

Increase productivity and efficiency of sustainable agribusiness value chains
Fall Armyworm has Become Important

- Maize is the most preferred host of FAW
  - FAW also noted on other crop plants e.g. sorghum & wheat
  - Literature information: FAW attacks over 80 plants species

The pest threatens:
- Food and nutrition security
- Feeds industry
- Employment
- Trade

- Maize is one of the main staple crop in Bangladesh
- The demand is increasing in Bangladesh
Interventions and Achievements
Intervention Points in Bangladesh

Bangladesh increases efforts to fight fall armyworm

Exports discussed the status of the outbreak, the role of research and applicable measures.

By Selma Jahan, M. Shahadat Haque Khan and Cynthia Motyka

May 20, 2019

Researchers, policymakers and other agricultural partners participated in the workshop on fall armyworm. (Photo: Gulshan Jahan)

The International Maize and Wheat Improvement Center (CIMMYT) and the Bangladesh...
- 12500 Pheromone trap
- 25000 lure (attractant)
- 37500 killing strip
- 30 mobile set for early warning
Hands on Training on Pheromone Trap for Fall Armyworm

- 14 Regions of DAE
- Started from 10 December
- Class room and field demonstration
Hands on Training on Pheromone Trap for Fall Armyworm
Training for Capacity Building

Resource person from 4 leading Agricultural University in Bangladesh

- Bangladesh Agricultural University
- Shere-E-Bangla Agricultural University
- Patuakhali Science and Technology University
- Sylhet Agricultural University

- 64 Districts
- 100 batch
- 30 Participants in 1 batch
- Total 3000 participants
E-pest Surveillance

Solar Based Automated Monitoring System

Consist of automated pest monitoring trap
- a solar panel and a battery
- several HD cameras
- a modem
- GPS
- Optional self cleaning mechanism
- Other advanced electronics that collect data, take picture and send them to the cloud-based IT platform

Better, more informed and timely crop protection decisions can be made based on the provided information.
Image of trapped insect inside the pest monitoring trap
Observation of trapped insects in the mobile app
Monitoring in desk

Area-wide overview

Area-wide overview—network average catch

Trapped insects data in computer (responsive)
Intervention Points in Bangladesh

1. Harnessing Technical Expertise to guide management of FAW- National taskforce
2. Assessment of FAW infestation and spread in Bangladesh
3. Issuance of alerts/advisories
4. Consolidation & dissemination of technical information materials
5. Information sharing & awareness creation
6. Authorization of pesticides for interim use & efficacy evaluation
7. Launching of nation-wide control campaigns & emergency response
8. Research to bridge knowledge and technological gaps
1. HARNESSING TECHNICAL EXPERTISE

- Multi-Institutional Technical Team (FAW-MITT)
  - Several institutions are participated
  - Team has been working on capacity building in implementation of strategies of managing FAW
2. ASSESSMENT OF FAW INFESTATION AND SPREAD IN BANGLADESH

- Assessments done to guide plans for action
  - March 2019: First survey - confirmation of FAW in 24 Districts by BARI
  - 2019-2020: Rapid survey by CIMMYT, FAO
3. ISSUANCE OF ALERTS/ADVISORIES

- Alerts issued by DAE
  - To trigger surveillance, resource mobilization and action

- Invasion by FAW caused great panic
4. CONSOLIDATION AND DISSEMINATION OF TECHNICAL INFORMATION MATERIALS ON FAW

• Brochures
• Field Guide
• Posters
• Factsheets
Several channels used

- Mass media – radio, TV, Mobile Apps, YouTube, Web publishing
- Training & extension
- Technical support e.g. through Universities, CABI
6. AUTHORIZATION OF PESTICIDES FOR INTERIM USE & SUBSEQUENT EVALUATION FOR REGISTRATION

- SfNPV- *Spodoptera frugiperda* Nuclear Polyhedrosis Virus

**NEWER INSECTICIDE FAMILIES**

**Spinosyns**: spinosad (Tracer), spinetoram (Radiant)

**Avermectins**: emamectin benzoate (Denim)

**Oxadiazine**: indoxacarb (Avaunt)

**Diamides**: chlorantraniliprole (Coragen), flubendiamide (Belt)
7. LAUNCHING OF NATION-WIDE CONTROL CAMPAIGNS
8. BRIDGING KNOWLEDGE & TECHNOLOGICAL GAPS

Initial areas of focus

- Status and socioeconomics of fall armyworm
- Tools and techniques for surveillance, monitoring and reporting
- Insecticides - effectiveness, application regimes, socioeconomics & safety
- Biopesticides, entomopathogenic isolates and botanical extracts
- Diversity and host range of fall armyworm
- Maize germplasm with resistance
- Ecosystem management practices
Sustainable management initiatives

.... we need to do more to succeed against FAW

...hence the need for a National FAW Management Strategy
Actions needed

IPM TRIANGLE

Biological Control

Cultural Control

Host Plant Resistance

Pesticides (Biopesticides & Synthetic Pesticides)
Fall Armyworm Management Strategy

Strategy developed

**Goal**: Sustainable maize production for enhanced food security, employment creation and improved livelihoods [addressing national development goals and Sustainable Development Goals].

**Purpose**: Reduce crop losses associated with FAW infestation [lose less; manage costs of production].

**Components of FAW management strategy**

1. Enhancing awareness, knowledge and skills
2. Impact assessment & immediate actions
3. Surveillance, early warning and reporting
4. Bridging knowledge gaps
5. Policy and regulatory support
6. National implementation and coordination mechanism
Critical Considerations for Success

✓ Team-work and strengthening of collaborative efforts are paramount in dealing with emerging pests/diseases.
  ❖ *Given the diversity of institutions involved, action and reaction time is sometimes very long*

✓ Need to innovatively utilize available knowledge, skills and technologies.
  ➢ Integrated management of pests should be emphasized, always.
    ❖ *Compatibility of circumstances various options under prevailing*

✓ Policy and financial support should be accorded to an institutionalized “Standing Committee on Crop Pests and Diseases”.
  ❖ *Readily available resources are vital in dealing with outbreaks*
THANK YOU