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REPORT

Fifth Meeting of the Technical Committee of the FAO Global Action for Fall Armyworm (FAW) Control

10 November 2021

FAW Secretariat, Global Action for FAW Control

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1. Welcome Remarks

- [1] The Executive Secretary of the Fall Armyworm (FAW) Secretariat and Director of the Plant Production and Protection Division (NSP) Mr Jingyuan Xia welcomed the 42 participants, including observers and members of the Technical Committee (TC). Mr Xia noted the need to make up for time lost in the work of the Global Action for Fall Armyworm (GA) due to the COVID-19 pandemic. As moderator of the meeting, he welcomed a new member to the TC, Mr Neil Hausmann, Senior Program Officer, Bill & Melinda Gates Foundation.
- [2] The Chairperson of the Technical Committee, Mr Robert Bertram, opened the meeting by welcoming all participants, and expressed appreciation for their commitment to mitigate the damage due to fall armyworm (FAW). He reiterated the importance of continued work to understand the severity of the pest on the ground, and of collecting and sharing information on the pest's ecology, impact and management in order to advise the Steering Committee (SC). It is also important to learn lessons from the GA and how it might apply to confronting other invasive pests.
- [3] Mr Bertram also congratulated TC member David Hughes from Pennsylvania State University on receiving new funding under the Feed the Future Innovation Lab for Current and Emerging Threats to Crops. The lab will serve as a venue for a broad coalition of experts from around the world to collaborate on novel approaches to monitor, predict and combat current and emerging threats to crops with a focus on West Africa, East and Southern Africa, South and Southeast Asia and Central America.

2. Adoption of the Agenda

- [4] Mr Bertram presented the agenda, which was adopted.

3. Global Action Achievements and the Way Forward

- [5] Mr Buyung Hadi, FAO Agricultural Officer and Coordinator of the FAW Secretariat, provided a report on the global implementation of the GA. Fall armyworm is now being reported in 77 countries around the world. FAW is still being reported primarily in maize crops but has also been reported on sugar cane in Asia, as well as sorghum and ginger crops in Africa and South Asia, respectively. Its negative impacts include yield losses worth an estimated USD 9.4 billion per year in Africa.
- [6] In response, the FAW Secretariat has been coordinating work across three regions and eight geographic zones with a demonstration or hub country in each geographic zone as well as 54 'pilot' or scale-up countries. Work plans are being finalized, integrated pest management (IPM) packages are being developed, and fieldwork and capacity development is underway.
- [7] Key outputs of the GA include advancements in forecasting, particularly in monitoring and early warning systems in China. China's Monitoring and Early Warning System¹ involves 27 provinces; incorporating FAW population monitoring, forecasts and management; with risk predictions provided weekly that are actionable at field level. At the field scale, Fall Armyworm Monitoring and Early Warning System (FAMEWS) application has been

¹ www.ccpmis.org.cn

downloaded more than 5 000 times. Some 64 countries are using the application with total records of 61 596 FAW scouting and traps data. The data are visualized on both FAW and Hand-in-Hand (HiH) platforms in near-real time. Another key output relates to IPM capacity development through publications including global and regional training webinars, offered with support of TC members; some 10 training webinars with over 1 500 participants have been held; General Guidelines to Develop Regional IPM Strategy for FAW² have been produced; as well as FAW IPM guides³ written and published in Arabic. Farmer field schools (FFS) and extension training has developed 400 FFS master trainers and over 15 300 FFS facilitators trained on FAW management in over 30 countries; and over 14 800 extension agents trained on FAW management.

- [8] The eight demonstration countries are finalizing regional IPM strategies with their respective pilot countries and have started implementing their national work plans. Eight national task forces have been established in the demonstration countries, linking ministries of agriculture with research institutions and private sector work on IPM.
- [9] Total acreage infested by FAW as well as country-estimated yield losses caused by FAW were reduced in some demonstration and pilot countries during 2019 and 2020, an overall positive trend. Research also showed potential outcomes that include better yields and increased profitability, particularly if biopesticide-based IPM packages can be scaled up. Additionally, IPM packages are leading to reduced use of high-risk pesticides and increased activities of natural enemies in the field scale.
- [10] Increased training is another positive outcome, contributing to increased social benefits at local and regional levels. Potential social benefits of the GA include increased farmer capacities flowing from increased capacities of FFS facilitators and extension agents. In addition, coordination, institutional and technical capacities are raised at national, geo-zone and regional levels. Challenges include COVID-19-restrictions on travel, as well as continued FAW expansion across the globe. The way forward includes possible extension of the GA to 2023 and strengthening surveillance and IPM capacities across the countries.

4. Field Data and Analysis Platform for technology evaluation and demonstrations

- [11] Mr Rhett Harrison of World Agroforestry (ICRAF) described a 'Global Field Data and Analysis Platform' for agroecological technology evaluation, an idea that foresees a global trial on various IPM tactics across a diverse set of sites using standardized protocols. The basic module includes four treatments, conservation agriculture and intercropping, on-farm or on-station. Optional modules included: (i) additional intercrops; (ii) sorghum; (iii) large plots; (iv) local plant spacing; (v) and high/low tree cover. Additional treatments (non-factorial) would include pesticides, biopesticides, cultural practices and FAW tolerant varieties. Mr Harrison described the research team and research sites being used in Zambia, and outlined the data platform that is used. Data collection information includes site/farm registration, planting details, costs of production, scouting at three, six and nine weeks, parasitism, pitfall traps and pheromone trap captures, intercrop and maize harvests, socio-economic impacts and pest control strategies.

² <https://doi.org/10.4060/cb7549en>

³ <https://www.fao.org/3/cb7104ar/cb7104ar.pdf>

5. Global Impact Study: Framework and the Way for Contributions

- [12] Ms Frances Williams of the Centre for Agriculture and Bioscience International (CABI) outlined the Global Impact Study. Increasing evidence shows that the FAW invasion is causing significant maize yield losses, reduced incomes, food insecurity, as well as intensification of pesticide use and associated health problems. The impact study aims to document changes in FAW's impacts in two GA target countries – India and Kenya – and describe the GA's contributions to these changes. It will be conducted by CABI in collaboration with TC members, GA partners and the FAW Secretariat. Research questions will include: How have the FAW yield losses and farmer practices to manage FAW changed over time between 2018 (or earlier where possible) and 2022 in Kenya and one state in India? What are the socio-economic impacts of these changes? What kinds of interventions have the GA and its partners introduced in Kenya and India from 2018 to 2022? How have these interventions contributed to the observed changes in yield losses and farmers practices?
- [13] Quantitative data will be collected, including farm household surveys in India and Kenya. Electronic surveys will be conducted in 2022 at the end of the main maize production seasons. Between 500 and 800 maize-growing households will be interviewed in India and Kenya, respectively. Criteria to be used in selecting study regions will include major maize production zones, severity of FAW infestation and location of GA demonstration plots. Final study locations will be determined after discussions with the FAW Secretariat and national task force. The collected survey data will be used to understand the changes in FAW management practices, as well as the yield loss and socio-economic impacts of FAW and its management.
- [14] Methods to be used include estimating changes in FAW-induced yield losses and farmer practices and requires baseline information (a key challenge). Potential sources of baseline information include: existing CABI datasets from Kenya and India; GA partner data sets, where available; earlier literature; farmer recall of pre-GA situation, to be captured in surveys conducted in 2022 in Kenya and India. The study will follow rigorous approaches that have been used in studies by CABI, the International Maize and Wheat improvement Center (CIMMYT), and the International Centre of Insect Physiology and Ecology (icipe). Additionally, comparisons will be made of outcome indicators of FAW-affected and unaffected plots/households, while controlling for potential confounding factors within a regression framework.
- [15] Outcome indicators will be tested through quantitative methods; adoption of promoted technologies for the sustainable management of FAW; farmer estimated maize yield loss; socio-economic indicators, including net income from maize production; a Food Insecurity Experience Scale (FIES); rational use of pesticides, such as types of pesticides used, frequency of pesticide sprays, use of personal protective equipment. Qualitative data will include approximately 15 in-depth key informant interviews in Kenya and India to identify observed changes and assess how the GA, and partners' actions, have contributed to observed changes. Key informants will be identified through discussions with FAO and GA partners,

and Sprockler⁴ will be used for additional interviews to understand perceived causes of change.

[16] CABI's timeline foresees feedback on an assessment framework by the end of 2021; key informant interviews and Sprockler inquiry from April to June 2022; household surveys in September to October 2022 and a draft report in December 2022.

6. General Discussion

[17] Mr Xia opened the general discussion by asking members of the TC to consider what has been the major positive results of the GA and what the major challenges are facing the GA, particularly from the technical perspective. Similarly, what would TC members suggest should be raised during the upcoming SC meeting on 24 November 2021, especially in preparing for 2022 and a possible extension of the GA.

[18] Mr Prasanna Bodhuppalli from the International Maize and Wheat Improvement Center (CIMMYT) made a request for greater clarity on economic data and a robust data set on FAW damage to crops other than maize. It was agreed that further studies are needed.

[19] Mr Bertram asked for information concerning how effective the GA is at reaching women farmers and if any assessments are being done concerning major food safety issues such as aflatoxin and its impact on human health and livestock. Mr Hadi said that farmer field schools (FFS) are the key method used to reach farmers on the ground and it has institutionalized women as members and trainers – thus ensuring women are equally involved. Mr Xia asked that data on women participation be collected from the demonstration countries. Ms Williams noted the input that reduction in yield quality, such as aflatoxin contamination associated with FAW feeding on maize ears, should be considered in the impact study.

[20] Mr Hughes said that an integrated package was being developed for maize at the Innovation Lab at Penn State University. He described plans that include intercropping with maize to improve soil health and investigating pathogens in maize. He added that climate change remained a huge problem, particularly with water shortages and drought that compound problems, such as insect pests like FAW.

[21] Ms May-Guri Saethre of the Norwegian Agency for Development Cooperation (NORAD) suggested that future discussions should include the question of whether to integrate the GA's procedures and plan with regard to FAW into larger programmes that deal with multiple other threats and the broader impact on food security.

[22] Mr Bertram reiterated the need to think about what aspects of the GA are worth building on in a structural and systemic way to help manage other emerging threats.

[23] Mr Bertram also suggested the importance of reviewing the IPM technology table included in the General Guidelines to Develop Regional IPM Strategy for FAW as new evidence and technologies have emerged in the last year. Together with the support of a technology evaluation and the impact study on FAW and the GA, a review of the technology table should be a part of the TC work programme for the next year.

⁴ www.sprockler.com

7. Concluding Remarks

[24] Mr Xia summarized the meeting thus:

The highlights of the **GA achievements** between 2019 and 2021 include:

- Globally-vetted **General Guidelines for Developing Regional IPM Strategy**, written together with the TC.
- **Prevention and Preparedness Guidelines**, written together with the TC.
- **Coordination mechanisms** at multiple levels, including global, regional, geographic zone, national and farmer field levels, leaving no one behind.

[25] The main **outputs** of the GA between 2019-2021 include:

- **Forecasting and early warning**: the migration monitoring and early warning system is functioning in China for landscape scale monitoring and early warning; and FAMEWS is functional for field scale scouting in all three target regions.
- **Control**: Some demonstration countries reported national level yield losses below 5 percent, well within the goal of the GA.
- **Prevention and preparedness**: The GA disseminated Prevention and Preparedness Guidelines to help slow down the spread and prepare countries for the eventuality (in some countries) of FAW introduction.

[26] **The ways forward** for the GA in 2022:

- It is important to continue efforts to **increase awareness among decision makers** that FAW still poses a problem in reducing yield.
- **Increasing farmers' capacities** is paramount to boost adoption of various technologies.
- **Scaling up technologies** for prevention, forecasting and IPM to be conducted in 2022, especially through field demonstrations.
- **Technical support is needed** in all these efforts. The GA welcomes all TC members to contribute in all demo and pilot countries.

[27] Immediate **take home messages** for the TC from the meeting include:

- The TC will **give a report at the SC meeting**, conveying the discussions from this meeting, including the need for GA extension and possible scope expansion, as well as describing the two technical initiatives.
- The initiative on **globally standardized protocols, data collection tools and data platform for technology evaluation** is very important. A presentation from the World Agroforestry Centre (ICRAF) is requested for the annual meetings with demonstration countries in December 2021 to obtain buy-in from countries and get the initiative off the ground in January 2022. ICRAF will continue to lead the initiative in 2022 in collaboration with National Task Forces and TC members.
- The initiative to set up an **impact study** is extremely important for to get feedback on the TC efforts and to support resource mobilization efforts. CABI was asked to take the lead on this while coordinating with all National Task Forces and TC members.

Appendix 1: Meeting Agenda

AGENDA ITEMS		DOCUMENTS	PRESENTER	PROPOSED TIME
1	Welcome Remarks		Mr Robert BERTRAM TC Chairperson, and USAID Chief Scientist	10 minutes
2	Adoption of Agenda	01_GA-5thTC_Nov 2021		5 minutes
3	Global Action Achievements and Ways Forward	PPT Presentation	Mr Buyung HADI Agricultural Officer FAW Secretariat	15 minutes
4	Field Data and Analysis Platform for technology evaluation and demonstrations	PPT Presentation	Mr Rhett HARRISON ICRAF	15 minutes
5	Global Impact Study: Framework and the Way for Contribution	PPT Presentation	Ms Frances WILLIAMS CABI	15 minutes
6	General Discussion			45 minutes
7	Concluding Remarks		Mr Jingyuan XIA Executive Secretary of FAW Secretariat, and NSP Director	10 minutes

The meeting was moderated by Mr Jingyuan XIA, Executive Secretary of FAW Secretariat, and Director of the Plant Production and Protection Division (NSP)

Appendix 2: List of participants

	Name	Organization name, Address
1.	Mr Robert Bertram Chief Scientist, Chairperson of the Technical Committee	United States Agency for International Development (USAID), Washington, D.C., United States of America
2.	Mr Jingyuan Xia Director NSP	FAO Plant Production and Protection Division (NSP)
3.	Mr BM. Prasanna Director of CIMMYT's Global Maize Program and the CGIAR Research Program on Maize	International Maize and Wheat improvement Center (CIMMYT), Mexico
4.	Mr Malick Ba Country Representative – Niger, West & Central Africa Program	International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Niger
5.	Ms Frances Williams Global Monitoring and and Evaluation Manager	Centre for Agriculture and Bioscience International, Kenya
6.	Ms Roma Gwynn Vice-President	IBMA International Bio-pesticides Manufacturers Association, Brussels, Belgium
7.	Mr Johnnie van den Berg Professor; Program Manager: Integrated Pest Management	North-West University, South Africa
8.	Ms Vera Ros Assistant Professor	Wageningen University & Research, Wageningen, Netherlands
9.	Ms Sheila Willis Head of International Programmes	Pesticide Action Network (PAN UK), Brighton, United Kingdom
10.	Mr Chris Dale Assistant Director	Plant Health Surveillance and Diagnostics Program, Plant Health Policy Branch, Biosecurity Plant Division Australian Department of Agriculture, Water and Environment
11.	Mr Emmanuel Okogbenin Director of Technical Operations	African Agricultural Technology Foundation, Nairobi, Kenya
12.	Mr Georg Goergen Entomologist / Biocontrol Specialist	International Institute of Tropical Agriculture (IITA), Benin
13.	Mr Rhett Harrison Tropical Forest Ecologist & Conservation Biologist	International Centre for Agroforestry Research (ICRAF), Zambia
14.	Mr David Hughes Associate Professor of Entomology and Biology	Penn State University, Pennsylvania, United States of America
15.	Mr Andy Ward Stewardship Director	Crop Life International, Brussels, Belgium

16.	Mr Neil Hausmann Senior Program Officer	Bill & Melinda Gates Foundation
17.	Wang Zhenying	Plant Protection Institution of Chinese Academy of Agriculture (IPP-CAAS)
18.	Mr Carlos A. Blanco	United States Department of Agriculture (USDA)
19.	Mr Sujay Rakshit	Director, ICAR-Indian Institute of Maize Research, PAU Campus, Ludhiana, Punjab (India)
20.	Ms May-Guri Sæthre	Senior Advisor, the Norwegian Agency for Development Cooperation (NORAD)
21.	Mr Buyung Hadi Agricultural Officer	Plant Production and Protection Division (NSP)
22.	Ms Elisabetta Tagliati Chief Technical Advisor	Plant Production and Protection Division (NSP)
23.	Mr Chado Tshering Programme Officer	Office for Small Island Developing States (SIDS), Least Developed Countries (LDCs) and Land-locked Developing Countries (LLDCs) (OSL)
24.	Mr Puyun Yang Agricultural Officer	FAO Research and Extension Unit Office for Innovation (OINR)
25.	Ms Rosanne Marchesich Senior Emergency and Rehabilitation Officer	FAO Emergency and Resilience Division (OER)
26.	Mr Zhongxin Chen Senior Information Technology Officer	FAO Information Technology Division (CSI)
		Observers
27.	Ms Alison Watson Head of the ASEAN Fall Armyworm Action Plan Secretariat	Grow Asia, Singapore
28.	Ms Regina Eddy Coordinator, Fall Armyworm Interagency Task Force	United States Agency for International Development (USAID), Washington, D.C., United States of America
29.	Mr Maged Elkahky Agricultural Officer	Plant Production and Protection Division (NSP)
30.	Mr Baogen Gu Senior Agricultural Officer	Plant Production and Protection Division (NSP)
31.	Ms Sarah Brunel Implementation Officer	International Plant Protection Convention (IPPC) Secretariat
32.	Mr Haekoo Kim Programme Officer	Plant Production and Protection Division (NSP)
33.	Ms Verena Wilke Programme Specialist	Plant Production and Protection Division (NSP)
34.	Ms Sandra Cordon Information Management Specialist	Plant Production and Protection Division (NSP)
35.	Ms Svetlana Velmeskina	Plant Production and Protection Division (NSP)

	Office Assistant	
36.	Mr Abera Haile IPM/Entomology Specialist	FAO SFE
37.	Mr Yubak Dhoj GC Plant Production and Protection Officer	FAO RAP
38.	Mr Mohamedelhady Sidatt Plant Production and Protection Officer	FAO SNE
39.	Mr Jean Bahama Plant Production and Protection Officer	FAO RAF
40.	Mr Mathew Abang Plant Production and Protection Officer	FAO SFS
41.	Mr Adin Bloukounon-Goubalan	FAO SFW