Food and Agriculture Organization of the United Nations

REPORT

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

15 March 2022

FAW Secretariat, Global Action for FAW Control

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1. Welcome Remarks

[1] Mr Robert Bertram, Chairperson of the Technical Committee of the Global Action (GA) for Fall Armyworm (FAW) Control and Chief Scientist for USAID, opened the meeting by welcoming the 41 members of the Technical Committee and observers. He expressed appreciation for their commitment and emphasized the importance of continued work to collect and share information on the pest's ecology, impact and management in order to advise the Steering Committee of the Global Action. Mr Bertram said it was vital to communicate FAW's widespread and negative impacts, including the damage caused by FAW and yield losses worth an estimated USD 9.4 billion per year in Africa alone – the highest among all invasive alien species. Communicating FAW's impact is particularly important in the context of discussions about a possible extension of the GA for another year. He noted that FAW is now being reported in 78 countries around the world, most recently in the Kingdom of Saudi Arabia. Mr Bertram said that updating integrated pest management (IPM) matrices, and reviewing the IPM technology table included in the General guidelines for developing and implementing a regional IPM strategy for FAW control, is important, taking account of new technologies and changes in FAW's invasive range and where it will establish itself in future, amid a changing climate.

2. Adoption of Agenda

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

3. Update on the Global Action for Fall Armyworm Control

[3] The Executive Secretary of the Fall Armyworm (FAW) Secretariat and Director of the Plant Production and Protection Division (NSP) Mr Jingyuan Xia reported on the **progress, impacts and core activities in the global implementation of the GA**. Mr Xia described the coordination, IPM, and prevention work since 2020 across three regions and eight geographic zones with a demonstration or hub country in each geo-zone, that have been linked with 54 pilot or scale-up countries. **Progress** in seen in forecasting, particularly in **monitoring and early warning systems in China**, where the Fall Armyworm Monitoring and Early Warning System[1] involves 27 provinces; incorporating FAW population monitoring, forecasts and management with weekly risk predictions that are actionable at field level.

[4] At the field scale, **progress in monitoring and early warning** is evident in scouting using the Fall Armyworm Monitoring and Early Warning System (FAMEWS) app, downloaded more than 5 000 times. Over 60 countries are using the app with total records of over 63 000 FAW scouting and traps data, visualized on both FAW and Hand-in-Hand (HiH) platforms in real time, said Mr Xia. FAMEWS datasets are applied by the International Centre of Insect Physiology and Ecology (*icipe*) to validate a model to predict spatio-temporal FAW density using climatic variables and availability of host plants.

[1] www.ccpmis.org.cn

[5] **Progress** is seen in **IPM capacity development** through trainings including 1 657 global webinars; 271 geo-zone training webinars across eight geo-zones; and 140 021 individuals trained during events held with national governments. Progress is also apparent in success with application of IPM technologies: for example, in Egypt, maize-soybeans and maize-cowpea intercropping has reduced FAW incidence by five to 16 percent and increased maize yield by 20 to 29 percent, compared to maize monocropping. In China, the efficacy of biopesticides, natural enemies and sex pheromone in controlling FAW has been documented.

[6] **Progress** in actions for **prevention and preparedness** has included such technical training as **three** global webinars organized on prevention and risk assessment (PRA), diagnostic, inspection and surveillance, with 120 participants from over 70 countries attending each webinar; advances by members of the FAO-IPPC Working Group on Quarantine and Phytosanitary Measures; implementation of biosecurity strategies in September 2021 by the Pacific Plant Protection Organization and the Asian and Pacific Plant Protection Organization. Furthermore, the Commonwealth Science and Industrial Research Organization (CSIRO) in Australia undertook a genomics analysis of south-east Asia FAW populations, suggesting that commodity movements led to FAW's spread and the high genetic diversity in the FAW populations from Australia, Laos, Malaysia, Myanmar, Papua New Guinea, the Philippines, and Viet Nam.

[7] **Progress** is also seen in **knowledge products** including the global FAW IPM guidelines; global guidelines for FAW prevention and preparedness (available in four languages); the farmer field school (FFS) IPM Guide for India; the FAW IPM Guide in Arabic for NENA region; and the FAW Control in Action newsletter (seven editions).

[8] **Impacts of the GA** have included **raising awareness worldwide** of the importance of fighting FAW through discussions at the global level in the FAO Council (2022, 2020); Committee on Agriculture (COAG) (2020); and FAO's Committee on Commodity Problems (2021). In addition, FAO senior management recognized the FAW Secretariat as an outstanding team in 2022. Regional awareness raising included discussions at the FAO Regional Conference for Asia Pacific (2022, 2020) and the Regional Conference for NENA (2022). At the national level, National Task Forces on FAW control were established in over 30 countries; and FAO was recognized with an award from the Bureau of Plant Industry of the Philippines for its support to national government in mitigating damage from FAW.

[9] **Impacts in terms of FAW damage reduction** are seen in demonstration countries Burkina Faso and China where the percentage of maize area seriously affected by FAW has been reduced; and in pilot countries Indonesia and Viet Nam. Estimated yield losses have also been reduced in Burkina Faso, China, Indonesia and Nepal. **Impacts** are also seen in improvements in farmers' livelihoods in China, with IPM practices contributing to improved yields and incomes; and in South Sudan, according to data from a pilot project led by the Centre for Agriculture and Bioscience International (CABI). That project used an NPV-based biopesticide that resulted in a 63 percent yield gain compared to untreated maize fields. Increased production was equivalent to USD 609 per hectare, which exceeded the USD 72 per hectare cost for biopesticide application.

[10] **Core activities at the national level in 2022** will include: effective coordination and

organization by convening National Task Forces; technology evaluation/adaptation with national agricultural research extension systems (NARES), regional and global research organization; farmer training using FFS and other approaches for validated/adapted technologies; large-scale field demonstrations of validated IPM technologies; field days/field visits to expose community members to IPM technologies.

[11] **Core activities at the regional and geo-zone level** in 2022 will include: geo-zone and regional resource mobilization and information exchanges; technical training and extension conferences; coordination between the regions and FAW Secretariat; and work with regional plant protection organizations (RPPOs) to adapt and implement prevention and preparedness guidelines.

[12] **Core activities at the global level** in 2022 will include: globally-standardized protocols and data collection for technical evaluation; GA impact assessment; global technical webinars; resource mobilization and partnerships; and communications and outreach.

[13] **Technical committee core activities** in 2022 will include: contributions to protocols for technology evaluation; comments on impact assessment methodology and data contributions, if available; support to demonstration countries for technology evaluation, demonstration and capacity development; contributions to global technical webinars; and revision of technology tables.

[14] Mr Xia emphasized the need to make up lost time in the work of the GA due to the COVID-19 pandemic and related travel restrictions; and the importance of extending and expanding the GA for another year, outlining the rationale, activities and outcomes of extending the GA to 2023. That includes: **filling gaps in FAW IPM dissemination and adoption due to COVID-19** and **capitalizing on opportunities to extract lessons learned to manage other invasive pests**. Activities would include concentration on capacity building in regulation, adaptation and use of FAW IPM technologies, capturing processes that work in the GA; stock-taking and priority-setting with regard to invasive pests, tools and target regions. Outcomes would include increased adoption of locally-adapted IPM techniques and technologies in 2023 with the GA poised to tackle broader invasive plant pest challenges beyond 2023; and organizing a global conference on FAW.

4. Feed the Future Innovation Lab for Current and Emerging Threats to Crops: Opportunities for synergy

[15] David Hughes, a professor at Pennsylvania State University and member of the TC, described the Feed the Future Innovation Lab for Current and Emerging Threats to Crops (CETC), and opportunities for synergies between researchers at universities and national and international organizations. Mr Hughes underscored that the Innovation Lab promotes a "FITTER" approach to agriculture: Forecasting, Inspecting, Training of Trainers, Evaluation and Research. To address emerging threats, the lab will promote a "FARMS" approach: Forecasting, Assessing, Research, Marketing and Surveillance. IPM packages will be promoted and shared with millions, and research will be conducted on scaling IPM from only 1 000 farm fields in 10 counties in Kenya, to as many as 6-8 million farmers with outreach via television, promoting such practices as climate-smart agriculture, intercropping to improve

soil fertility, and release of parasitoids.

[16] The Feed the Future lab is **working with *icipe* on capacity-building for IPM, to strengthen private initiatives for IPM solutions, and to conduct research on the economics of IPM**. As well, working with Michigan State University, the lab is **developing agricultural-scientific-machine learning (AgSciML) for emerging threats and assisting in generating predictive models**, said Mr Hughes. With the International Maize and Wheat improvement Center (CIMMYT) and Britain's John Innes Centre operating in Nepal and Kenya, work continues on **plant disease diagnostics and wheat rust forecasting**. Penn State, as overall manager, is providing the platforms.

[17] Mr Hughes described how existing platforms and knowledge are being adapted to confront emerging threats, including the Africa Armyworm, and three locust species in southern Africa. Young people will also be recruited from communities to build connections and trust, he said, adding that gender implications in farming must be understood and emphasized.

5. Global Impact Study: Update on methodology development

[18] Ms Frances Williams of the Centre for Agriculture and Bioscience International (CABI) provided an **update on the continuing Global Impact Study assessing the GA**. The study is being conducted by CABI in collaboration with GA's partners and the FAO-based FAW Secretariat and aims to document changes in FAW's impacts in two GA target countries, namely Kenya and India, and describe the GA's contributions to these changes. She described the research questions and noted that quantitative data will be collected, including farm household surveys. Electronic surveys will be conducted in 2022 at the end of the main maize production seasons. About 500 and 800 maize-growing households will be interviewed in both countries respectively, with criteria for selecting study regions to 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 Forces. 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.

[19] Methods used include **estimating changes in FAW-induced yield losses and farmer practices** and requires baseline information. Potential sources of baseline information include existing CABI datasets from Kenya and India, GA partner data sets, where available, earlier literature, and farmer recall of pre-GA situation, to be captured in surveys conducted in 2022 in Kenya and India. **Comparison of outcomes of participants and non-participants of GA-FFS demonstration plots will complement the qualitative analysis**. Outcome indicators tested through quantitative methods will include: 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; and 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 Sprockler[2] methodology will be used for additional interviews to understand perceived causes of change, said Ms Williams.

[20] Based on feedback from the previous TC meeting in November 2021, CABI analysis will be carried out with a **gender lens**; where partners are able to share field level estimates, they will be used in the analysis; and recommendations on future GA work is to be included in the final report. However, an assessment of changes in maize quality due to aflatoxins is unlikely as it is only possible to verify aflatoxin presence through field testing kits, and not farmer feedback, she said.

[21] CABI's timeline foresees data sharing from March to July 2022; study design to be finalized in March to April 2022; key informant interviews and Sprockler inquiry from May to July 2022; household surveys from September to October 2022; data analysis including key informant interviews in July through August 2022; household surveys conducted from November to December 2022; and a draft report presented in December 2022.

6. General Discussion: Focus on extension to 2023 to reach farmers

[22] **Widespread support was heard for extending the timeline of the Global Action into 2023 and potentially expanding its scope to include other invasive pests and diseases.** Mr Bertram said that a great deal has been accomplished thus far under the GA, including building "a big tent" of valuable partnerships among diverse organizations. With such an expanded, extended approach, it will be possible to address more than a single pest and instead confront other emerging threats, he said. In that regard, 2023 could be a stock-taking period for reflection on what has been achieved thus far, and what aspects of the GA could be further built on, in a structural and systemic way, to help manage a significant list of emerging threats worldwide, said Mr Bertram.

[23] Ms Rosanne Marchesich, Senior Emergency and Rehabilitation Officer in FAO Emergency and Resilience Division (OER), also supported the expansion of the GA. Innovative technology being developed can be applied to more than one pest – such as that developed for fighting desert locust. So much has also been learned about converting technological knowledge into practical work for use at the ground level, she said.

[24] Mr Xia emphasized that expansion and extension of the GA would contribute to essential work in the sustainable management of key transboundary plant pests through numerous strategies, including use of biocontrol, biopesticides, and concrete monitoring work.

[25] Mr Hughes highlighted the value of continued multipronged efforts to tackle multiple pests and diseases and noted that a platform makes it easier to accumulate experiences, making it quicker to develop and deploy additional models. He emphasized the particular contributions made through geo-spatial mapping and monitoring, which can inform farmers about a range of conditions including soil moisture levels in their fields, or rainfall outlooks for the coming four months. The Innovation Lab is working with Norad and other partners in this area.

[2] www.sprockler.com

[26] CABI's study into the FAW and GA impact this year could add to the data necessary to support findings and approaches under Plant Health, said Ms Ismahane Elouafi, FAO Chief Scientist, Vice-Chairperson of the TC, and moderator of the discussion.

[27] Ms May-Guri Saethre of Norad asked if plant health should be viewed as a component of a larger, holistic One Health approach, noting that other plant pests such as desert locust and wheat rust could also considered as part of such a broad approach. Plant health supports One Health, said Mr Xia, and thus, plant health, in combination with the Global Action, could be described as making a contribution to One Health.

7. Concluding Remarks

[28] Ms Elouafi, FAO Chief Scientist and Vice Chairperson of TC , thanked participants and said she hoped that the GA would be extended for another year while also making the most of the TC's expertise and contributions to cooperatively develop a significant Plant Health programme within the umbrella of a One Health approach.

Appendix 1: Meeting Agenda

	AGENDA ITEMS	DOCUMENTS	PRESENTER	TIME (minutes)
1	**Welcome Remarks**		Robert BERTRAM TC Chairperson, and USAID Chief Scientist	10
2	**Adoption of Agenda**	01_GA-6thTC_March2022	Robert BERTRAM	5
3	**Update on the Global Action for Fall Armyworm Control**	PPT Presentation	Jingyuan XIA Executive Secretary of FAW Secretariat, and NSP Director	15
4	**Feed the Future Innovation Lab for Current & Emerging Threats to Crops:** Opportunities for synergy	PPT Presentation	David HUGHES Professor, Pennsylvania State University	15
5	**Global Impact Study:** Update on methodology development	PPT Presentation	Frances WILLIAMS and Justice TAMBO, CABI	15
6	**General Discussion:** Focus on extension to 2023 to reach farmers		Ismahane ELOUAFI FAO Chief Scientist, Vice Chairperson of TC	45
7	**Concluding Remarks**		Ismahane ELOUAFI	10

NOTE: The meeting was chaired by TC Chairperson Robert Bertram with the general discussion moderated by TC Vice Chairperson Ismahane Elouafi.

Appendix 2: List of Participants

	Name, Last 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.	Ms Frances Williams	Centre for Agriculture and Bioscience International CABI
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.	Ms May-Guri Saethre Senior Advisor	Norwegian Agency for Development Cooperation (NORAD)
5.	Mr Wang Zhenying	Plant Protection Institution of Chinese Academy of Agriculture (IPP-CAAS)
6.	Mr Johnnie van den Berg Professor; Program Manager: Integrated Pest Management	North-West University, South Africa
7.	Mr Darrell Sexstone Programme Manager (on behalf of Mr Christophe Larose)	International Cooperation and Development (INTPA), European Commission, Brussels, Belgium
8.	Ms Vera Ros Assistant Professor	Wageningen University & Research, Wageningen, Netherlands
9.	Mr Emmanuel Okogbenin Director of Technical Operations	African Agricultural Technology Foundation, Nairobi, Kenya
10.	Mr Georg Goergen Entomologist / Biocontrol Specialist	International Institute of Tropical Agriculture (IITA), Benin
11.	Mr David Hughes Associate Professor of Entomology and Biology	Penn State University, Pennsylvania, United States of America
12.	Mr Andy Ward Stewardship Director	Crop Life International, Brussels, Belgium
13.	Mr Mel Oluoch Regional Director	SASAKAWA Africa Association, Kenya
14.	Mr Sujay Rakshit	Director, ICAR-Indian Institute of Maize Research, PAU Campus, Ludhiana, Punjab (India)
15.	Ms Rosanne Marchesich Senior Emergency and Rehabilitation Officer	FAO Emergency and Resilience Division (OER)
16.	Ms Ismahane Elouafi Vice-Chairperson of the Technical Committee	FAO Chief Scientist
17.	Mr Jingyuan Xia Director NSP	FAO Plant Production and Protection Division (NSP)

18.	Mr Buyung Hadi Agricultural Officer	Plant Production and Protection Division (NSP)
19.	Mr Zhongxin Chen Senior Information Technology Officer	FAO Information Technology Division (CSI)
		Observers
20.	Ms Alison Watson Head of the Fall Armyworm Action Plan Secretariat	Grow Asia, Singapore
21.	Mr Justice Tambo	Centre for Agriculture and Bioscience International (CABI)
22.	Mr Ivan Rwomushana	Centre for Agriculture and Bioscience International (CABI)
23.	Ms Allison Cooper	United States Agency for International Development (USAID)
24.	Ms Luiza Munyua Senior Science Officer	African Union, Inter-African Phytosanitary Council (AU-IAPSC)
25.	Ms Sarah Brunel Implementation Officer	International Plant Protection Convention (IPPC) Secretariat
26.	Mr Maged Elkahky Agricultural Officer	Plant Production and Protection Division (NSP)
27.	Ms Anne Sophie Poisot Agricultural Officer	Plant Production and Protection Division (NSP)
28.	Ms Shangchuan Jiang Associate Professional Officer	Plant Production and Protection Division (NSP)
29.	Mr Qingpo Yang Associate Professional Officer	Plant Production and Protection Division (NSP)
30.	Mr Gianni Palmerio Office Assistant	Plant Production and Protection Division (NSP)
31.	Mr Haekoo Kim Programme Officer	Plant Production and Protection Division (NSP)
32.	Ms Verena Wilke Programme Specialist	Plant Production and Protection Division (NSP)
33.	Ms Sandra Cordon Information Management Specialist	Plant Production and Protection Division (NSP)
34.	Ms Svetlana Velmeskina Office Assistant	Plant Production and Protection Division (NSP)
35.	Ms Xiao Liang Programme Officer	FAO South-South and Triangular Cooperation (PST)
36.	Ms Cristina Alderighi Programme Officer	FAO Office of SIDS, LDCs and LLDCs (OSL)
37.	Mr Jean Bahama Plant Production and Protection Officer	FAO RAF
38.	Mr Abera Haile IPM/Entomology Specialist	FAO SFE
39.	Mr Adin Bloukounongoubalan Agricultural Officer	FAO SFW

40.	Mr Tristan Nondah Plant Protection and Production Officer	FAO SFC
41.	Mr Mohamedelhady Sidatt Plant Production and Protection Officer	FAO SNE
42.	Mr Mathew Abang Plant Production and Protection Officer	FAO SFS