Food and Agriculture Organization of the United Nations

REPORT

2023 Annual Meeting on the Implementation of FAO Global Action (GA) for Fall Armyworm (FAW) Control in Asia and NENA regions

4 April 2023

FAW Secretariat, Global Action for FAW Control

Contents

1. Opening Remarks

[1] Mr Jingyuan Xia, Executive Secretary of the Fall Armyworm (FAW) Secretariat and Director of Plant Production and Protection Division (NSP), opened the meeting and welcomed the 38 participants and observers, including national focal points (NFP) from demonstration and the pilot countries in Asia, and the Near East and North Africa (NENA) regions.

[2] He emphasized the value of the FAO Global Action (GA) for Fall Armyworm Control which has created a functional and effective coordination network across three regions and eight geozones, each with a demonstration or hub country that is, in turn, linked with over 50 pilot or scale-up countries. That functional co-ordination mechanism links global, regional and national efforts directly with activities in farmers' fields to ensure that solutions are delivered where they are needed most.

[3] Mr Xia noted that in 2016, only six African countries reported the insect pest; but today, over 79 countries across Africa, the Near East, Asia and the Pacific are reporting FAW. In Africa alone, FAW is estimated to have caused annual losses as high as USD 9.4 billion; furthermore, FAW introduction has also intensified the use of chemical pesticides in many countries, risking human and environmental health. Thus, the GA arrived just in time.

[4] Together with various partners working through the GA, several Integrated Pest Management (IPM) tactics in geozones have been tested, validated, disseminated and implemented in farmers' fields with good results.

[5] Mr Xia said that progress is evident in the reduction in FAW-affected areas and in reduced yield losses in many countries, while IPM capacity development has been increased. As a result, farmers are seeing greater economic and social benefits through improved yields and increased environmental benefits are seen through reduced use of chemicals on farms. Farmer Field Schools (FFS) have led in training and knowledge sharing, changing farmers' behaviour.

[6] The Centre for Agriculture and Biosciences International (CABI)'s Global Impact Study of FAW and the GA, using a methodology piloted in India and Kenya, has demonstrated four major indicators of successes, including strong coordination, innovation through IPM packages, multistakeholder engagement, and effective FFS.

[7] The FAW Secretariat at FAO will support global capacity development and information exchange on several fronts in 2023: a biocontrol forum in June 2023 in Kenya, aimed at enhancing the capacities of national stakeholders to scale-up the production and use of biological control measures in invasive pest management; a global symposium on sustainable FAW management in October 2023 in China; and a side event describing the successful completion of the GA during the year-end FAO Council meeting 4 December 2023.

[8] Objectives for this annual meeting were outlined by Mr Xia: participants will report on major achievements in GA implementation; discuss lessons learned from three years of GA implementation, including ways to apply these lessons in tackling other pests and diseases; and agree on the way forward in concluding the GA at year-end.

2. Adoption of the Agenda

[9] Ms Anne-Sophie Poisot, agricultural officer and Deputy Director of NSP, outlined the agenda *(Appendix 1)*, which was adopted.

3. Reports from Demonstration Countries

[10] Demonstration countries in the Asia and NENA regions reported on the FAW situation, their major activities and achievements of the first semester of 2022, core activities planned for 2023, and suggestions for the GA.

[11] **3.1 China**. Ms Juan Zeng, Division Director of the National Agriculture Technical Extension and Service Centre (NATESC) Ministry of Agriculture and Rural Affairs (MARA), presented on behalf of Mr Fuxiang Wang, Deputy Director General of NATESC. Ms Zeng described progress and ways forward there under the GA, reporting that the FAW occurrence area in parts of China combined had increased from 1 143.9 million ha in 2019 to 1 396.3 million ha in 2021. In response, China established an NTF involving several government agencies, including the Department of International Cooperation, Department of Crop Protection, NATESC, and the Institute of Plant Protection (IPP) in CAAS.

[12] China's GA implementation strategy involves region-specific management of: anniversary breeding areas to reduce immigrated sources, suppress local fertility and the pest base; migratory transition areas, to trap adults, control larvae, reduce transit pest sources; and protective areas, to prevent and control early-stage larvae, restraining the damage. For the three pilot countries in Northeast Asia, the China NTF recommended they apply the protective area strategy, said Ms Zeng.

[13] The implementation strategy for technology involves using China's monitoring and early warning system for FAW, applying a joint air-ground monitoring technology for FAW, and using a real-time online analysis system for the pest's flight path.

[14] Air temperatures were significantly lower, due to cold weather in southern China from January to March 2022, resulting in a reduced occurrence of FAW and its dispersal distance and speed were limited and slower than in previous years, she said. FAW yield loss was estimated at two percent to four percent each year from 2019 to 2022, inclusive.

[15] Other technologies include radar monitoring and early warning in large airspaces, combined with lamp traps, to accurately identify FAW and analyse its flight trajectory; sex-pheromone trapping, installing 15 sex pheromone traps per hectare. Many sites attracted more than 200 moths in one night. Chemical control has been successful, with effectiveness exceeding 98 percent; and use of Bt corn types showed good control efficacy, from 60 percent to 95 percent for FAW in field tests.

[16] Implementation activities with the GA as early as March 2021 included monitoring and control techniques, scientific use of pesticides, and more than 500 monitoring staff employed. By October 2021, radar monitoring of FAW, study of its migration path, survey techniques and information reports on FAW were applied and more than 200 monitoring experts and technicians used. Training sessions, field surveys of FAW status across monitoring sites, and a national radar monitoring network were established.

[17] China calculated the occurrence area rose in 2022 to twice the previous three years, according to the larva's generations. The actual occurrence degree of 2022 was less severe than the previous three years because of low temperatures in winter and spring, said Ms Zeng. FAW yield loss was estimated at between two percent and four percent in 2019, 2020, 2021, and 2022.

[18] Achievements and impacts include increased profitability, since the amount of pesticide control was reduced by half, and the cost per hectare reduced from RMB 1 500 to RMB 700. That had an environmental impact, as significantly reduced use of pesticides can protect the environment, human and animal safety.

[19] The way forward in 2023 includes continued application of IPM strategies to control FAW to avoid outbreaks of FAW and reduce pesticide use; promotion of the national radar monitoring system in China; and strengthened technical cooperation with FAO and geozones. As well, application of the IPM strategy to control FAW will continue, to avoid the outbreak of FAW and reduce pesticide use. As well, more than 5 000 intelligent lamp and pheromone traps, and other monitoring devices will be connected to an upgraded information platform.

[20] One or two on-site demonstration activities will be organized in Yunnan Province, a national training class on FAW control will be held, and over 200 agricultural technicians and 4 000 new professional farmers will be trained. Assistance will be provided in organizing the fourth-quarter workshop in China on global FAW control and sustainable management.

[21] **3.2 India.** Ms Sunita Pandey, Deputy Director (Entomology) Ministry of Agriculture and Farmers Welfare, presented on behalf of Mr OP Verma, Deputy Director, Plant Quarantine Division, Directorate of Plant Protection Quarantine and Storage (DPPQS), Ministry of Agriculture and Farmers Welfare.

[22] The percentage area of maize infested by FAW has gradually decreased between 2019-20 and 2022-23, from 11.7 percent to 4.63 percent, she said. In 2022-23, state agriculture departments conducted numerous training sessions, including Maharashtra with 7 245 trainings involving 118 664 participants.

[23] The Directorate fights FAW via its 36 Central Integrated Pest Management Centres (CIPMCs) throughout the country, and via extensive communications, said Ms Pandey. An IPM-FFS guide for facilitators of FFS on maize, with special emphasis on FAW, was published jointly by DPPQ&S and FAO in Hindi as well as English.

[24] Suggested management measures from CIPMCs include: use of biocontrol agents such as *Trichogramma pretiosum/Telenomus remus*; fungal biocontrol agents such as *Metarhizium anisopliae/Beauveria bassiana/Verticillium lecanii*; other biocontrol agents, such as *Bacillus thuringiensis ver. Kurstaki*, and *NPV;* use of botanical formulations such as NSKE, azadirachtin; intercropping maize with pulses; bird perches in early stages of crop development and pheromone traps for mass trapping and destruction of male moths. Farmers should be trained to identify natural enemies and judicious use of pesticides, she said.

[25] Challenges for the GA include the voracious nature of FAW and its flying capacity; staggered sowing of maize in India; and early development of resistance. Recommendations include raising awareness in farming communities through regular surveys, training programmes and FFS; multidisciplinary and multi-institutional strategies should be used, including extensive awareness creation for improving the income of smallholder maize farmers; emphasize pest surveillance, development of high-yield, climate resilient hybrids with inbuilt FAW resistance.

[26] Improved crop nutrition, bio-control agents, agro-ecological approaches such as diversifying intercrops and trap crops should be integrated in mitigating the FAW damage as these are eco-friendly, target-specific and improve resilience in a sustainable way, she said. As well, ICT tools could play an important role in forecasting pest incidence and spread.

[27] Core activities for 2023 include continuous surveillance of cultivated maize and identification of areas prone to FAW infestation; educating/sensitizing farmers and stakeholder though FFS and HRD. Orientation training programmes are planned in FAW-affected states with special emphasis on FAW management and IPM techniques for management of FAW by use of pheromone trap and other eco-friendly methods. Stakeholders will be asked to include discussions on FAW management practices during various programmes with farming communities and FAW-related literature and advisories will be disseminated among State agriculture departments for creating awareness among farming community on FAW management.

[28] **3.3 The Philippines.** Ms Herminigilda A. Gabertan, Chief of Crop Pest Management Division, Bureau of Plant Industry, Department of Agriculture, presented on behalf of Mr Jonar Yago, Assistant Director of the Bureau of Plant Industry. In the first half of 2022, FAW infested about 1.11 percent of corn, mainly in OPV corn. About 97 percent of FAW-infested areas were treated with subsidized FAW-registered pesticides. Some farmers were reportedly using pesticides registered for local armyworms and other corn pests, due to considerably lower costs.

[29] Protocols were developed on biological control agents: NPV; EPFs: *Beauveria bassiana, Metarhizium anisopliae*, and a native *Metarhizium rileyi* from FAW; EPNs: *Heterorhabditis indica* and *Steinernema abbasi*; *Bacillus thuringiensis*; and *Trichogramma sp*. Fourteen pesticides at different levels of effectiveness were tested, as well as cultural control, including landscape management and crop rotation and intercropping, and host plant resistance. Insecticide resistance management was also tested.

[30] Recommended biological control agents should be augmentatively released, requiring efficient mass production and distribution support. Mass production and distribution protocols should be part of the regional package, which should also include FAW damage or loss assessment protocols.

[31] Field visits by policy-makers and extension officers, farmer leaders and farmer cooperatives and extension agents are planned from geozone countries to field demonstration sites on FAW IPM-PAMS and farmer-led, municipal-level FAW M&S systems; and applied field research for technical evaluation of FAW IPM-PAMS strategies and technology options are planned. FFS are to be scaled-up nationwide in partnership with local governments; a regional webinar training series with geozone countries on farmer awareness and public information campaigns on FAW are planned, as well as production and distribution of harmonized FAW information, education and communications materials, including a video series on sustainable FAW management practices.

[32] Challenges and opportunities in the first semester of 2022 included: linking with geozone countries for knowledge generation and sharing good practices on the sustainable management of FAW and other crop pests, insecticide-resistance management (IRM) strategies for control of FAW and other crop pests and diseases, and research for development (R4D) efforts to effectively control and manage transboundary crop pests and diseases.

[33] Regional collaboration opportunities included linking with geozone countries for knowledge generation and sharing on transboundary plant pest and disease monitoring and EWS and information exchanges.

[34] **3.4 Egypt.** Mr Mohammed Abdel Meguid, Head of the Committee on Pesticides and Committee of FAW control, Ministry of Agriculture and Land Reclamation, said that maize is the most infested crop in most Egyptian governorates and FAW infestation has been recorded on small areas of wheat, sugar cane, and sugar beet crops.

[35] Activities have included a regional workshop on FAW management held 3-4 October 2022 and organized with support from FAO, to disseminate the results of field assessments with 70 beneficiaries in the NENA region.

[36] IPM technology evaluations showed that four local maize hybrids demonstrated tolerance to FAW as indicated by the lowest Infestation rate and highest maize yield, compared to other sensitive hybrids. Other evaluations showed that an earlier planting date (15 June) was the most efficient date to minimize the FAW infestation rate and maximize the maize crop yield, compared to the recommended planting date (1 July) and later planting date (15 July). Intercropping maize with soybean or cowpea showed a remarkable reduction in FAW infestation rates and increase maize yield compared to individual maize plants.

[37] The impact of different agricultural pesticides (chemical and bio-pesticides) on the reduction rate of FAW infestation was measured. Biopesticides BT and *emamectin benzoate* reduced FAW infestation by more than 60 percent while chemical pesticides *cyantraniliprole* and *chlorantraniliprole* reduced FAW infestation by over 75 percent and *azadirachtin, Lambda-cyhalothrin, Indoxacarb* and *Metarhizium anisopliae* failed in tests.

[38] Achievements in biological control and conservation of natural enemies included three training courses about FAW natural enemies rearing, which was delivered to 105 trainees. More than two million parasitoids were reared with a capacity of 700 000 for *Telenomus remus*, 800 000 for *Trichogramma minutum,* and 500 000 for *Trichogramma evanecens*. Field release of FAW natural enemies was implemented with a total of 20 ha. *T. remus* was released at rate of 8 000/ha in Shandaweel, ElMataana, Luxor, and Nagahammadi.

[39] Core activities for the GA in 2023 include: continued pesticides evaluation for FAW control and of biological control agents (natural enemies and bio products); preparing detailed protocols for mass rearing for FAW natural enemies; training for 40 FFS facilitators to implement 20 FFS in ten governorates; preparing and distributing communication materials and manuals.

[40] Mr Abdel Meguid warned that the FAW infestation rate increased from 2019 to 2022 and all agricultural governorates are infested by FAW. Problems include technical issues with the FAMEWS app, insufficient financing, high costs and high prices may impede FAW control.

4. Reports from the Regions

[41] **4.1 Asia**. Mr Yubak GC, Senior Agriculture Officer, FAO Regional Office for the Asia Pacific (RAP), reported that since 2019, a regional steering committee meeting, a geozone meeting including South Asia, Southeast Asia, Northeast Asia, and a regional workshop in the Philippines with a webinar training series, have been held. As well, a large-scale field demonstration is being held in the Philippines. Capacity development has increased and FAW damage has been reduced.

[42] The way forward for the GA should include harmonized control measures for fast-spreading pests, including exchange information among neighboring countries, and technical assistance as needed; developing resilient control measures besides chemical pesticides; responses to

climate change impacts on pests; capacity development and raising awareness of nature-based solutions; alternatives to chemical pesticides.

[43] Responses are needed to pest-resistance to controls; inadequate institutional strengths with regard to monitoring and early warning systems, surveillance and capacity retention, pest alerts and risk communication; national, sub-regional, regional, international coordination and cooperation; private-sector engagement; and digitalization and innovation.

[44] **4.2 NENA.** Mr Thaer Yaseen, Regional Plant Protection Officer, FAO Regional Office for Near East and North Africa (RNE), said that 11 countries in the region had reported FAW infestations, with FAO's responding under the GA with actions including IPM. In the eight countries where FAW has not been reported, work has focused on FAW prevention, improving phytosanitary measures, and monitoring and early warning systems. Across the NENA region, a network of national focal points (NFP) was developed and 22 NFP meetings had been held as of March 2023.

[45] Biological control efforts included a survey for potential natural enemies in five countries: Syria, Palestine, Yemen, Lebanon and Egypt; and biocontrol labs strengthened, including a new construction in Jordan, an existing lab in Shandweel-Egypt, and three fermenters, one in Egypt and two in Syria. Training projects in the region involved 3 556 people and FFSs in the region include two in Palestine, three in Jordan, and three in Egypt.

[46] Enhancement of sustainable FAW management capacity included field assessments of six different agricultural practices assessed for the growing season 2021- 2022 at Egypt's Sohag, Luxor, and Aswan governorates. That included evaluation of the impacts of: 28 locally available maize hybrids for FAW resistance/tolerance; three different planting dates on the FAW infestation rate and maize crop yield; three planting distances and plant density on FAW incidence and maize crop yield; two mineral fertilizers on FAW infestation and maize crop yield; intercropping maize with other legume crops; eight pesticides on FAW mortality (including chemical and biopesticides).

[47] Across Yemen, Egypt, Jordan, Lebanon, Syria, and Palestine, a total of 77 FFS reached 1 264 farmers, and trained 92 FFS facilitators. Ultimately, 3688 individuals were trained in sustainable FAW management including farmers, extension workers, inspectors, FFS, NGOs and private-sector representatives.

[48] In Yemen, successful impacts included use of neem and *melia azedarach* extracts for the biological control of FAW; in Egypt, biocontrol laboratories were established as well as an FFS in Dandara; biocontrol of FAW is a success in Syria; Jordan has established its first biocontrol lab; demonstration plots for FAW control have been established in FFS in Palestine.

[49] The way forward in 2023 and beyond includes a possible Global Action on Plant Health to deal with banana wilt Fusarium TR4; Xylella fastidiosa; wheat rusts; and wheat blast.

5. Report from FAO FAW Secretariat

[50] Mr Buyung Hadi, Coordinator, FAW Secretariat (NSP), described work over the previous year to strengthen regional collaboration and enhance field capacities. That included three regional workshops held in 2022 in Asia, NENA and Africa involving more than 150 total participants from over 30 countries. Key technologies related to monitoring and early warning, cultural interventions (push-pull, intercropping), biocontrol and biopesticides used. Extension efforts at this time included government-led coordination; FFS; demonstration plots.

[51] Major global initiatives of 2022 included: global protocols for technology evaluation that are ready for use, a mobile data collection tool by ICRAF developed, training for research teams, global protocols adapted for the Philippines and Solomon Islands, data committed from Egypt and Indonesia; and, other countries are welcome to join the global trial or to submit data conducted before the development of the global protocol. Mr Hadi noted that a focus has been brought to the socio-economic impact of FAW, changes in IPM practice over time, the impact of GA on management practices, and yield losses due to FAW.

[52] As part of the CABI survey of the GA, household surveys and key informant interviews were conducted in July 2022 using methodology piloted in Kenya and India. Findings included: FAW remains a major challenge to maize production; infestation and damage levels on farmers' fields are decreasing; yield loss estimates associated with FAW presence were 5.5 percent in Kenya and 5 percent in India – that compares to yield loss estimates in the first years of FAW invasion of 11 percent to 58 percent, respectively. In the 2022 cropping season, drought affected maize productivity more than FAW.

[53] CABI findings also showed farmers are increasingly using a combination of cultural, mechanical, biological methods for FAW management; FFS and village awareness meetings were the key drivers of adoption in Kenya and India. Adoption of biological control was stimulated by participation in FFS, demonstrations, plant clinics and village awareness meetings.

[54] The overall conclusion was that the GA response to FAW has been effective, inclusive, and empowering, with a bundled approach of providing adequate finance, extensive research and coordination. Coordination was critical to ensuring that the FAW response led to positive results for farmers; it has been highly collaborative involving a multiplicity of actors; government buy-in and leadership were essential.

[55] For 2023, core activities through the GA will emphasize coordination and communication through geozone information exchanges including the biocontrol forum in Kenya in June 2023 and the global forum on sustainable FAW management in China in October 2023.

[56] Core activities concerning research and learning in 2023 will include an analysis of submitted data from demonstration countries; a global trial using shared protocol/mobile app with ICRAF; and communicating results of the CABI impact assessment. Core activities for training will include FFS and large-scale demonstrations; training on biopesticide registration; and training on mass production of natural enemies/biopesticide (as a part of the June biocontrol forum).

[57] Mr Hadi summarized lessons learned from the GA in the context of a proposed Global Action on Plant Health: mobilize global technical expertise (on all approaches, from prevention, monitoring to management, from all types of stakeholders) through an ad hoc technical working group to quickly send recommendations of options to national partners.

[58] Other lessons include noting which countries have adequate research, extension, policy, and regulatory infrastructure; and which countries will need stronger support. Global, regional and sub-regional fora can be used for information exchange; apply national-level/farmer-level capacity development in research, extension and policy/regulatory aspects where needed. Data collection and analysis on impacts, interventions, pest traits, dissemination methodologies, etc. should be gathered for continuous learning on best practices.

[59] Mr Hadi provided a potential outline for a new Global Action on Plant Health: Identify priority invasive pests and pathogens/crops for each region in collaboration with countries and FAO regional offices; create synergy with ongoing FAO and partners' regional/global initiatives on

plant health, identify champions for work components (e.g. prevention and preparedness, monitoring and early warning, IPM, dissemination and adoption); concentrate field efforts in select hub countries with regular regional and global info sharing fora; embed plant health as an inherent element of FAO's One Health approach and initiatives.

[60] Mr Hadi provided a potential outline for a new Global Action on Plant Health: Identify priority invasive pests and pathogens/crops for each region in collaboration with countries and FAO regional offices; create synergy with ongoing FAO and partners' regional/global initiatives on plant health, identify champions for work components (e.g. prevention and preparedness, monitoring and early warning, IPM, dissemination and adoption); concentrate field efforts in select hub countries with regular regional and global info sharing fora; embed plant health as an inherent element of FAO's One Health approach and initiatives.

6. Open Discussion

[61] Mr Xia asked Mr Abdel Meguid for more information about tolerant varieties of maize described in his presentation. A discussion followed on challenges in bio-pesticide production and transportation, since certain bio-pesticides involve live organisms.

[62] Mr Hadi noted that sustaining biopesticides was also discussed during the GA Africa annual meeting held on 3 April 2023, and that enabling registration for biopesticides had been suggested; mass release of natural enemies of FAW is also effective, but usually funded by government and there may not be easily commercialized.

[63] Mr Yaseen noted that biocontrol practices vary across countries: Syria, for example, produces and distributes biopesticides and natural enemies without charge, but in Tunisia, in contrast, the system is private. Challenges lie in bio-pesticide production and transportation since these can involve live organisms; therefore, local production would be more efficient, he added.

[64] Mr Ibrahim Al-Jaboory, President of the Arab Society of Plant Protection, said that good results have been reported in Syria with biopesticides and natural enemies, and those results would be presented soon. Meanwhile, research is continuing in Syria where extensive surveys listing natural enemies are continuing.

[65] He also praised the commitment and efforts of the FAW Secretariat on behalf of farmers and applauded the Secretariat's focus on biopesticide instead of harsh pesticides.

[66] Mr Kris Wyckhuys of the FAW Secretariat emphasized the importance of avoiding chemical pesticides and instead using biological control and farmer training methods, adding that the present is a good moment to create further momentum by integrating biological control from the outset while avoiding incompatible practices such as using insectides.

[67] The value of monitoring and data collection, particularly through FAMEWS, was discussed with an emphasis on training farmers to use traps for early understanding and capture of FAW as early as possible, to head off infestations. Training and use of traps and monitoring also motivate farmers to keep learning, said Ms Poisot.

[68] Mr Elkahky thanked the Egypt team for its persistent work with FAMEWS, collecting data through traps and scouting to capture hundreds of records daily. Mr Qingpo Yang also emphasized the importance of monitoring.

[69] Ms Wilma Cuaterno described successful use in the Philippines of national broadcast media to spread messages to farmers across the country's many islands about integrated FAW management.

7. Concluding Remarks

[70] Mr Xia described the meeting, the last under the GA, as very successful and said progress made under the GA is particularly evident in its strong coordination and technical achievements in sustainable management of FAW.

[71] Mr Xia noted China is doing very well in reducing losses and working towards the GA overall target of reducing losses to below 5 percent. That is in line with the GA targets.

[72] Take home messages setting out the way forward included ensuring a successful completion of this GA in its final year of 2023. That includes field demonstrations in each country or geozone, since these have powerful impacts. As well, this demonstrates to policy makers the impact of the GA. Mr Xia emphasized the need for strong data collection and analysis that provides evidence of the GA impact on yield and demonstrates the outcomes, all of which should be widely shared. Third is the value of active engagement/participation, including the June 2023 biocontrol forum in Kenya.

[73] In addition, a FAO global symposium on FAW sustainable management, transitioning from emergency control, is planned for the end of October 2023 involving multiple regions; and the GA presentation during the FAO Council meeting in December 2023. Fourth, he said, is the important work to increase awareness, through active promotion of sustainable FAW management principles through communications and all forms of outreach.

[74] He urged countries to prepare for a transition to a plant health management programme from the work under of the GA of sustainable FAW management.

Appendix 1: Agenda

AGENDA

The 2023 Annual Meeting on the Implementation of the FAO Global Action for Fall Armyworm Control in the Near East & Asia and the Pacific

4 April 2023 (11 am Rome time)
Teleconference: https://fao.zoom.us/j/96317619184
Passcode: 77831169

AGENDA ITEMS	DOCUMENTS	PRESENTER	PROPOSED TIME (min)
1 Opening Remarks		Mr Jingyuan Xia Director of Plant Production and Protection Division (NSP), FAO	10
2 Adoption of the Agenda		Ms Anne-Sophie Poisot, Moderator, FAW Secretariat (NSP), FAO	5
3 Reports from Demonstration Countries			
3.1. China	Presentation (PPT)	Ms Juan Zeng	10
3.2. India	PPT	Ms Sunita Pandey	10
3.3. The Philippines	PPT	Ms Herminigilda A. Gabertan	10
3.4. Egypt	PPT	Mr Mohammed Abdel Meguid	10
4 Reports from the Regions			10
4.1 Asia	PPT	Mr Yubak GC	10
4.2 NENA	PPT	Mr Thaer Yaseen	10
5 Report from FAW Secretariat	PPT	Mr Buyung Hadi Coordinator, FAW Secretariat (NSP), FAO	10
6 Open Discussion (Major challenges and suggestions)		All participants	30
7 Concluding Remarks		Mr Jingyuan Xia	5

Appendix 2: Planting data

Country	Year	Total maize/corn area planted (ha)	Area affected (ha)	Area under control (ha)/*Maize area scouted*	Yield loss estimate
China (not updated)	2022	40 000 000	425 000	613 000	2% to 4%
	2021	41 470 000	---	2 168 000	2% to 4%
	2021	41 264 000	---	2 169 000	2% to 4%
India (update July 2023	2022 (May-June, Kharif)	6 800 000	326 000		---
	2022 (Oct-Nov, Rabi)	2 360 000	980 000		---
	2020-2021	---	---	---	---
The Philippines *(note: figures colored red indicate corn, not maize)*	2022 (Jan-May) (corn)	294 099	3 274	3 168	---
	CY 2021 (corn)	809 257 (Q2) 522 727 (Q3)	2 161 (Q2) 7 113 (Q3)	1 665 (Q2) 6 919 (Q3)	---
Egypt (updated July 2023)	2021	1 160 000	10 366		---
	2020	1 010 000	2 072		---
	2019				---
Nepal	2019	957 650	---	---	---
	2020	954 158	---	---	6.51
	2021	957 000	---	---	9.68

Appendix 3: Activities and achievements

Country	2022-2023				2022-2023
	Outputs (# of people trained, knowledge products, etc.)	**Challenges**	**Training needs**	**Opportunities**	**Planned core activities**
China	Progress in monitoring and early warning systems with such highlights as high precision meteorological data based on the weather research and forecasting model (WRF); insect radar networking platform and flight trajectory simulation technology based on insect radar; and a real-time online trajectory analysis system. Digital estimation by multiple analysis included occurrence dynamics of FAW: biological behaviors/searchlight traps/field abundance; atmosphere conditions: meso-scale numerical simulations of atmospheric circulations; an atmospheric trajectory analysis; and Geographic Information System (GIS). A FAW trend forecast was developed.	Conducting field research challenging due to COVID-19 pandemic restrictions, with official meetings and visits among pilot countries suspended or canceled.		Season-long sessions of training of trainers for 20 agricultural technicians is planned, 10 FFS for 300 farmers will be organized, and one national FAW prevention and training workshop is planned. Information and education campaigns will aim to reach 20 000 maize farmers through various means, and geozone meetings are being organized for sharing information and expertise.	A GA meeting and national training event in July and December 2022 in Beijing and Guangxi respectively; and an FFS session on safe and effective pesticide application, UAV demonstrated at a small scale. Northeast Asia. China will also upgrade its FAW early warning system (EWS) and pest migratory monitoring; more trapping of FAW moths; as well as establishing an insect radar network along southeast China's borders. Demonstrations of innovative technologies in FAW prevention and control.
India (UPDATED JULY 2023)	In 2022-23, state agriculture departments trainings included 7 245 trainings involving 118 664 participants in Maharashtra. In Uttar Pradesh, 919 trainings reached 144 675 participants; in Andaman and Nicobar, 12 trainings reached 350 participants; 190 trainings in Jharkhand with	Broad host range, FAW voraciousness, rapid flying capacity; staggered sowing; early development of resistance.	.	Research institutes, network projects, agricultural universities under National Agricultural Research System, extension workers, and agriculture officials, to proactively create FAW awareness and management.	Continuous surveillance of cultivated maize areas, identification of areas prone to FAW infestation, educating and raising awareness among farmers and stakeholders though FFS and HRD; promotion of IPM techniques for FAW management e.g., use of pheromone traps and other ecofriendly methods.

Country	2022-2023				2022-2023
	Outputs (# of people trained, knowledge products, etc.)	**Challenges**	**Training needs**	**Opportunities**	**Planned core activities**
	6 850 participants; 22 training in Mizoram for 660; 231 trainings in Punjab for 7 170; 24 in Uttarakhand for 4 104 participants. FFS for FAW management by CIPMCs included 333 farmer participants including 134 females.				
The Philippines	Capacity development activities resulted in 792 corn farmers (around 40% female) graduating from 32 pilot season-long FFS in FAW-IPM PAMS in eight municipalities of Pangasinan. A webinar training series organized for geozone countries on the regional IPM package of technology strategies and options for the sustainable management of FAW. A farmer-managed and community-based FAW monitoring and surveillance (M&S) system in eight municipalities in Pangasinan involving some 320 Bantay Peste farmers, around 40 % of those were female. As a result, minimal damage from FAW was observed in corn fields as farmers immediately acted on the monitoring information. A regional IPM package of technology strategies and options for the sustainable management of FAW was finalized, including IPM for	Evaluating and re-engineering FFS activities, particularly, agro-ecosystem analyses (AESA), group work, given COVID-19 safety protocols. Designing various FFS modules to be relevant to farmers facing threat but not affected yet by FAW; farmers minimally affected by FAW; farmers facing FAW infestation at outbreak levels. Challenges in up-scaling farmer training to benefit more farmers facing FAW infestation under a decentralized extension system; strengthening community-level	Farmers' training programmes and mass communication campaign to facilitate uptake of FAW management techniques, technologies by developing communication material folders/leaflets / brochures manuals/ for extension officers and farmers; sharing success stories and information with bio-agents and a biopesticide protocol with other countries and coordinating		Large-scale field demonstrations on farmer-led and corn-cluster level FAW M&S systems planned. Bantay Peste will include corn-cluster farmers in six municipalities in South Cotabato (August-November 2022) and eight municipalities in Pangasinan (December 2022-March 2023). Electronic applications for M&S of major corn pests and diseases, including FAW, will be provided. FAW forecasting and EWS will be developed at the national, regional, and provincial levels, and a regional webinar training series on monitoring and managing transboundary pests, including EWS for geozone countries, planned.

Country	2022-2023				2022-2023
	Outputs (# of people trained, knowledge products, etc.)	**Challenges**	**Training needs**	**Opportunities**	**Planned core activities**
	prevention, avoidance, monitoring and suppression of the pest.	FAW, other crop pest and disease forecasting systems; complementing farmer field scouting, monitoring activities; developing appropriate farmer pest risk identification, management applications; knowledge generation, sharing on FAW IPM-PAMS.	inputs from other countries.		
Egypt (updated July 2023)	About 1 110 trained on various IPM options for FAW control; IPM field demonstrations implemented; six different agricultural practices assessed for 2021, 2022 at Sohag, Luxor, and Aswan governorates. A total of 175 national surveyors and data reviewers trained on monitoring and early warning system using FAO-FAMEWS. Training in technology of mass rearing of FAW natural enemies for 85 researchers and stakeholders through three training programmes. Three harvest days including 90 smallholder farmers were organized at Aswan, Luxor, and Sohag governorates with FAO support to disseminate	The FAW infestation rate increased from 2019 to 2022 and all agricultural governorates are infested by FAW. Technical issues with FAMEWS app;insufficien t financing, high costs and prices may impede sustainability of FAW control.			Training for 40 FFS facilitators to implement 20 FFS in ten governorates; preparation, distribution of communication materials; manuals for FFS, monitoring and early warning, biological control, field scouting guide, and for field days. Also, leaflets/bulletins, extension posters and books, a TV episode and one short extension video.

Country	2022-2023				2022-2023
	Outputs (# of people trained, knowledge products, etc.)	**Challenges**	**Training needs**	**Opportunities**	**Planned core activities**
	guidance on FAW management technologies. Monitoring and field scouting focused mainly on maize planting areas, considering the other potential key hosts. Some 1 832 pheromone traps provided by FAO distributed to all agricultural governorates; 155 mobile phones from FAO for surveyors. Total participation in training events from 2019-2022 included 175 trained on monitoring and early warning, and trap installation and replacement; 90 reached through harvest days (raising awareness); 750 on FAW IPM options; 95 on biological control. A total of 905 beneficiaries reached from 2019-2022 through awareness, training sessions held in all agricultural governorates for maize, rice, and sugarcane farmers as well as specialists in pest control, extension, plant quarantine, and researchers. Three FFS established as model in two governorates to be applied in all other governorates.				

Appendix 4: List of Participants

	Given name, surname	Role, Organization/Institution
Annual Meeting (Asia and NENA) Attendees		
1.	Ms Herminigilda A. Gabertan	Chief of Crop Pest Management Division, Bureau of Plant Industry, Department of Agriculture, the Philippines
2.	Mr Mohammed Abdel Meguid	Head of the Committee on Pesticides and Committee of FAW Control, Ministry of Agriculture and Land Reclamation, Egypt
3.	Ms Mekki Chouibani	Executive Director, Near East Plant Protection Organization (NEPPO), Morocco
4.	Ms Sunita Pandey	Deputy Director (Entomology), Directorate of Plant Protection, Quarantine & Storage, Ministry of Agriculture and Farmers Welfare, India
5.	Mr Mohamed I. Abd Elmegeed	Chairman of Agricultural Pesticide Committee (APC), Ministry of Agriculture and Land Reclamation, Egypt
6.	Mr J.C. Sekhar	Principle Scientist, Indian Institute of Maize Research, India
7.	Ms Wilma Cuaterno	Division Chief, Crop Pest Management Division, Bureau of Plant Industry, Department of Agriculture, the Philippines
8.	Mr Golam Faruq	Director-General, Bangladesh Wheat and Maize Research Institute
9.	Ms Juan Zeng	National Agriculture Technical Extension and Service Centre (NATESC), Ministry of Agriculture and Rural Affairs, China
10.	Mr Zhenying Wang	Department of Agricultural Entomology, Chinese Academy of Agricultural Sciences (CAAS), china
11.	Mr Jie Liu	Agronomist, National Agriculture Technical Extension and Service Centre (NATESC), Ministry of Agriculture and Rural Affairs, China
12.	Mr Ibrahim Al-Jboory	President, Arab Society of Plant Protection & NENA Regional Plant Protection Consultant
13.	Mr Jaouadi Imed	Ministry of Agriculture, Tunisia
14.	Mr Kamel Khalifa	Ministry of Agriculture, Tunisia
15.	Mr Md Mostafizur Rahman Shah	Senior Scientific Officer, Bangladesh Wheat and Maize Research Institute
16.	Mr Imad Eid	Palestine Technical University, the Occupied Palestinian Territory
17.	Ms Rana Samara	Palestine Technical University, the Occupied Palestinian Territory
18.	Mr Ahlam Gaga	Libya
19.	Mr Ali El Badri	Libya
20.	Mr Mohamed AbdulAziz	Assistant Undersecretary for Agriculture Affairs Ministry of Works, Municipalities and Urban Planning, Bahrain

21.	Mr Sadek Abbass	National Plant Protection Organization, Iraq
22.	Mr Christian June Reyes	FAO, the Philippines
23.	Mr Ali Soliman (in screengrab)	Head of Central Administration of Plant Quarantine Cairo, Egypt
24.	Mr Ahmed Rezk	Egypt
Food and Agriculture Organization of the United Nations (FAO)		
25.	Mr Jingyuan Xia	Director, Plant Production and Protection Division (NSP), Executive Secretary of the FAW Secretariat, FAO
26.	Mr Buyung Hadi	Agricultural Officer, FAW Secretariat, Plant Production and Protection Division (NSP), FAO
27.	Mr Maged Elkahky	Agricultural Officer, FAW Secretariat, Plant Production and Protection Division (NSP), FAO
28.	Ms Anne-Sophie Poisot	Agricultural Officer, FAW Secretariat, Plant Production and Protection Division (NSP), FAO
30.	Mr Kris Wyckhus	ntegrated Pest Management (IPM) Specialist, FAW Secretariat, FAO
31.	Mr Qingpo Yang	Programme Specialist, FAW Secretariat, Plant Production and Protection Division (NSPD)
32.	Ms Fu Rong	Programme Officer, FAO China
33.	Ms Jasmine Magtibay	Programme Assistant, FAO, the Philippines
34.	Mr GC Yubak	Senior Agriculture Officer, FAO Asia-Pacific
35.	Mr Thaer Yaseen	Agricultural Officer, FAO Regional Office for Near East and North Africa (RNE)
36.	Mr Rajesh Dubey	National Operations and Programme Officer, FAO India
37.	Mr Kim Haekoo	Programme Specialist, Plant Production and Protection Division (NSP), FAO
38.	Mr Jean Claude Rwaburindi	Programme Specialist, Plant Production and Protection Division (NSP), FAO
39.	Ms Verena Wilke	Programme Specialist, Plant Production and Protection Division (NSP), FAO
40.	Mr Fidel Rodriguez	National Programme Assistant, FAO, the Philippines
41.	Mr Abdoulaye Saley Moussa	Plant Protection and Production Officer, FAO Sub-regional Office for Gulf Cooperation Council States and Yemen (SNG)
42.	Mr Ashraf Saber Alhawamdeh	Agricultural Officer, FAO Yemen
43.	Ms Yosra Ahmed	Agriculture Specialist FAO Regional Office for Near East and North Africa (RNE)
44.	Ms Zinette Moussa	National Consultant-Plant Protection, FAO Libya
45.	Ms Valeria Awad	Office Assistant, FAW Secretariat, Plant Production and Protection Division (NSP), FAO
46.	Ms Sandra Cordon	Communications Consultant, FAW Secretariat, Plant Production and Protection Division (NSP), FAO

47.	Mr Mohamed Yacoub	Assistant FAO Representative in Egypt
48.	Ms Jianqi Ding	Technical Advisor, Plant Production and Protection Division (NSP), FAO
49.	Mr Ibuki Takanishi	Agricultural Officer, Regional Office for Asia Pacific, FAO (FAORAP)
50.	Mr Maclean Vaqalo	National Consultant on FAW Management, FAO
51.	Mr MohamedelHady Sidatt	Agricultural Officer, Sub-regional Office (SNE), FAO
52.	Ms Ying Tu	Volunteer Operations, China, FAO
53.	Mr Anil Das	National Programme Consultant Bangladesh, FAO
54.	Mr KamalElhalag	National Plant Protection and Production, Egypt FAO