



FAO REGIONAL CONFERENCE FOR AFRICA

Thirtieth Session

Khartoum, the Sudan, 19-23 February 2018

Management of the Fall Armyworm in Africa

Executive Summary

Fall Armyworm, (*Spodoptera frugiperda*) (FAW) is an invasive insect that has been accidentally introduced in Africa. First reported in Central and West Africa in early 2016, FAW rapidly spread across the continent, affecting millions of smallholder maize producers. In addition to its preferred maize, FAW can feed on more than 80 plant species, including rice, sorghum, millet, sugarcane, vegetable crops and cotton. Farmers urgently need support and guidance to sustainably manage FAW in their cropping systems through Integrated Pest Management (IPM). Some management practices from the Americas can be quickly adapted to the conditions in Africa, however, short-term research is needed to rapidly test and validate the as yet unproven management practices.

Since the first occurrence of FAW, FAO, in collaboration with relevant partners, has developed a Framework for Partnership to guide a coordinated stakeholder development of projects and programmes in the areas of expertise, capacities and mandate.

This note presents FAO's actions as an immediate response to FAW, as well as its Programme for Action for Sustainable Management of FAW



I. Introduction

1. Fall Armyworm (*Spodoptera frugiperda*) (FAW) is an invasive pest native to the Americas. It was first officially reported in Central and West Africa in early 2016 and has quickly spread to many maize growing countries in Africa. FAW has been detected in nearly all countries of Africa, thus affecting millions of smallholder maize producers across the continent.
2. Maize is its preferred crop. However, FAW can feed on more than 80 plant species, including rice, sorghum, millet, sugarcane, vegetable crops and cotton. These are among crops which are strategic for achieving food security and nutrition.
3. Farmers urgently need support and guidance to sustainably manage FAW in their cropping systems through sustainable Integrated Pest Management (IPM). Although there are some management practices from the Americas that can be quickly adapted to the conditions in Africa, they need to be tested and validated. Some short-term research needs to be conducted to rapidly test additional potential but unproven management practices.
4. Massive communication and training campaigns must be conducted to help farmers and their organizations learn about FAW biology and ecology and how to manage their cropping systems. Finally, decision-makers must be aware of the potential threat and have access to information and advice regarding positive policies and programmes instead of giving away or importing large quantities of pesticides, which is probably not a sustainable response.
5. Furthermore, unguided use of pesticides results in environmental contamination, increased cost of production and increased impact on human health, livestock, and other non-target organisms and objects.
6. In response to the challenge, FAO, in collaboration with relevant partners, has undertaken a series of actions at local, national, subregional and regional levels. In addition, FAO has developed a framework to guide, in a coordinated manner, the development of projects and programmes by the stakeholders in the areas of their expertise, capacities and mandate. An FAO specific Programme has also been derived from that framework.
7. This note presents FAO's actions as an immediate response to FAW, as well as its Programme for Action for Sustainable Management of FAW.

II. FAO's immediate actions in response to FAW

FAO has taken and is taking several coordinated actions in Africa in response to FAW based on a corporate technical guidance:

Regional level

8. All Africa Stakeholders Consultation meeting was organized by FAO, the Alliance for a Green Revolution in Africa (AGRA) and the International Maize and Wheat Improvement Center (CIMMYT) (from 27 to 28 April 2017) to review the status of FAW incidence and impact in Africa and discuss options for minimizing damage including provision of concrete recommendations to effectively manage the pest in the continent. One outcome of the meeting was FAO to take the lead coordination role of FAW response in Africa.
9. Collaboration with the African Union: A meeting was held in Addis Ababa on 29 June 2017 between FAO and the African Union Commission to discuss coordination on immediate, mid-term and strategic response to manage FAW in Africa. On 3 October 2017, FAO presented the Framework for Partnership on FAW sustainable management in Africa during the Conference of the African Union Specialized Technical Committee on Agriculture (STC), Rural Development, Water and Environment in Addis Ababa. The framework was endorsed by the Conference. On the margins of the STC

Conference, a Partners' Round Table was organized on 4 October where the FAO Programme for Action for Sustainable Management of FAW in Africa was presented.

10. **FAW Experts Meeting:** FAO organized a South-South Cooperation FAW Technical Experts' Meeting in Accra, Ghana from 18 to 20 July bringing together experts from the Americas, Africa and others to share and update the state of knowledge on sustainable FAW management for smallholder family farmers. The experts reviewed key areas of management, including biological control, monitoring, economic thresholds, use of bio-insecticides, and the impact of plant biodiversity on FAW ecology. The synthesis report of the meeting can be found at: <http://www.fao.org/3/a-bt622e.pdf>.

11. **Farmer Field School (FFS) Curriculum Development:** Taking advantage of the Experts' meeting in Accra, FAO brought together FFS master trainers from across Africa to work with researchers to draft an FFS curriculum on IPM for FAW. This will be used to train additional FFS trainers, and roll out the FAW component in FFS in affected African countries. The curriculum consists of practical experiments, field studies and exercises that can be implemented with extension workers and farmers throughout a season-long FFS.

12. **FAW monitoring and early warning system development:** FAO identified together with farmers and other stakeholders a standard core set of data to be collected and recorded in the field for FAW monitoring. The data collection application has been developed and was reviewed in Entebbe from 13 to 15 November 2017. An initial version of the mobile app was distributed for testing in order to validate it by December 2017. The data collection module and platform will be available in early 2018. This will allow consistent data collection across the continent and will facilitate comparative analysis as well as training.

13. **FAW impact assessment:** FAO is working closely with CIMMYT and the Centre for Agriculture and Biosciences International (CABI), and has taken a leading role in formulating initial actions for impact monitoring and has been supporting assessment processes. A side event on FAW status in Africa and way forward was organized during FAO Conference on 4 July 2017. The panel of the event gathered Ministers for Agriculture of Zimbabwe and South Africa, Deputy Minister of Ghana, Ambassador of the United Kingdom and Director of the United Kingdom Department for International Development (DFID) Africa and highlighted key experiences made with FAW in Brazil, presented by an expert from the Brazilian Agricultural Research Corporation (EMBRAPA).

14. **An Advisory Note, Questions and Answers and FAO Key messages on FAW** were prepared in addition to several Guidance Notes including FAO position on the use of pesticides and genetically modified (GM) crops which were widely shared within FAO and with partners. Leaflets for FAW identification and management were also developed and published in collaboration with CABI.

15. **FAO organized a Resource Partner consultative meeting on 28 November 2017 in Rome** gathering resource partners and affected countries.

16. **All notes and documents are posted on a dedicated FAW page on the FAO Food Chain Crisis web site** (<http://www.fao.org/food-chain-crisis/how-we-work/plant-protection/fall-armyworm/en/>).

Subregional level

17. **Subregional trainings of trainers on FAW management** have been organized for Central, Eastern, Western and Southern Africa. Participants in the trainings came from National Plant Protection Organizations (NPPOs), extension services and FFS masters and facilitators. Those trained would in turn train other staff and farmers on management of the pest in their respective countries. Topics covered included FAW identification and diagnosis, scouting, early warning systems, contingency planning, impact assessments and integrated management options for the pest.

18. **Central Africa:** FAO organized a workshop with stakeholders in Central Africa, including the NPPO, the Inter-African Phytosanitary Council (IAPSC), the International Institute for Tropical

Agriculture (IITA), the Regional Economic Communities (RECs) (the Economic Community of Central African States [ECCAS] and the Economic and Monetary Community of Central Africa [CEMAC]) and PRASAC, in Kinshasa, Democratic Republic of the Congo, from 11 to 13 July 2017.

19. **Eastern Africa:** FAO and the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) co-organized a Subregional FAW Strategy Development Meeting from 18 to 20 September 2017 in Entebbe, Uganda. The meeting brought together a wide range of stakeholders (RECs, relevant research and development organizations, governments, the private sector, resource partners, etc.) to ensure a strong coordination of FAW management at subregional level. The five pillars that constitute key elements of the subregional strategy include: 1) surveillance, monitoring and forecasting; 2) management of FAW; 3) FAW impact assessment; 4) coordination, communication and training; and 5) resource mobilization. This meeting was preceded by a USAID-CIMMYT Workshop on FAW Pest Management Field Manual Development (from 16 to 17 September 2017), which FAO supported.

20. FAO is implementing a project funded by USAID/OFDA aimed at “Establishing an emergency community-based Fall Armyworm monitoring, forecasting, early warning and management system in eastern Africa” in collaboration with the Desert Locust Control Organization for Eastern Africa (DLCO-EA), CABI, the International Centre of Insect Physiology and Ecology (ICIPE), and Ministries of Agriculture of Eastern African countries.

21. **Southern Africa:** FAO organized a Consultative meeting in Harare (from 14 to 16 February 2017) with governments and stakeholders from Southern Africa to address pest awareness, situational update, emergency preparedness and rapid response to pests. It also co-organized with the Southern African Development Community (SADC) the Southern Africa Fall Armyworm stakeholders’ Awareness, Partnership and Coordination meeting (30 November-1 December 2017) to discuss the regional FAW response actions, lessons learned, challenges and preparedness plans for the 2017/2018 production season.

22. FAO organized the FAO Southern Africa Technical meeting from 25 to 26 April 2017 to review and update the status of the pest as well as to assess its impact on production and livelihoods.

23. FAO is working with national Vulnerability Assessment Committees (VACs) in conducting household level FAW food security and livelihood impact assessments in six countries (Malawi, Mozambique, Namibia, Swaziland, Zambia and Zimbabwe). Qualitative assessment tools for the impact of FAW on food security and livelihood have been pre-tested and used.

24. National level trainings for the rollout of the FAW regional mobile application surveillance system based on a grid of pheromone traps are currently ongoing.

25. **Western Africa:** FAO conducted a 6-days sub-regional FAW ToT in Abuja, Nigeria 5-10 September 2017 to improve the skills and knowledge of national plant protection, extension experts and FFS practitioners (Master trainers and facilitators) on FAW in Western Africa. The 15 countries of the region have been supported to develop FAW action plans that will serve as resource mobilization tools. Assessment and awareness missions were conducted to Burkina Faso, Cote d’Ivoire, Guinea Bissau, Guinea Conakry, Liberia, Mali and Sierra Leone. Presence of FAW was ascertained in all 15 countries as a result of the missions. FAO will support ECOWAS to draft a sub-regional FAW management program.

National level

26. Since the onset of FAW, FAO has undertaken several actions to strengthen African countries’ capacities to respond to FAW through TCP projects and other funding mechanisms. These projects aim at awareness raising, sensitization and strengthening pesticide management capacity at the producer level, strengthening capacity on early and correct identification of FAW, efficient pesticide application and best practices, and restoring productive capacity. To achieve this, the TCPs supported

countries to put in place action plans for FAW and national taskforces to coordinate their implementation.

III. FAO Coordination role in FAW Management

27. The participants of the All Africa Stakeholders Consultation meeting (AGRA/CIMMYT/FAO, from 27 to 28 April 2017) in Nairobi agreed that FAO take the lead coordination role in FAW response in Africa.

28. To ensure effective coordination, FAO, in collaboration with relevant partners, has developed a Framework for Partnership to guide, in a coordinated manner, the development of projects and programmes by the stakeholders in the areas of their expertise, capacities and mandate. This Framework for Partnership will help support sustainable management of FAW in Africa through better coordination of actions.

29. Within the Framework for Partnership, FAO and many development and resource partners have joined forces to coordinate their response to this new threat to ensure a sustainable management of FAW. The coordination work will need to take place at several levels: from farmer communities to local/district level to the national level where authorities will make relevant policy and programme decisions. Some recommendations, knowledge and key concepts are readily available and must quickly get to smallholder farmers and extension workers across the continent. All mechanisms, including national extension programmes and participatory approaches such as FFS must be combined with mass communication campaigns.

30. Eleven technical working groups coordinated by FAO were formed each led by the appropriate institute/organization; biological control; bio-pesticides; synthetic chemical pesticides; monitoring and early warning; communication, awareness and knowledge management; FFS, extension, plant clinics; agro-ecology; impact assessment; conventional host plant resistance; transgenic resistance; quarantine and phytosanitary measures.

31. Other possible solutions need to be further researched and tried in the different agro-ecologies in Africa. It is important that international partners work closely with regional and national research and development centres to further complete knowledge and refine recommendations.

32. Within the context of the Framework for Partnership, FAO has prepared a Programme for Action for Sustainable Management of FAW in Africa. This Programme presents to development and resource partners that part of the framework actions that FAO has prepared to directly coordinate and administer based on its comparative strengths. The Programme is divided into six components including management, research, communication and training, monitoring and early warning, policy and regulatory support, and coordination. Many of the activities described in the Programme include the active participation of partners and service providers. FAO will develop the appropriate Letters of Agreement or contracts under which the obligations and responsibilities of all parties will be defined. The Programme has been shared with key partners and is being used for resource mobilization. It is available in English at: <http://www.fao.org/3/a-bt417e.pdf> and in French at: <http://www.fao.org/3/a-bt417f.pdf>.

IV. Major achievements and lessons learned

33. Based on the knowledge on sustainable FAW management for smallholder family farmers shared with experts from the Americas, a review of key areas of management was made. This includes monitoring, economic thresholds, biological control and use of bio-insecticides and ecological aspects of FAW control. Lessons learned and recommendations have been compiled and will be tested under African conditions.

34. In most countries, the action that has been taken against FAW has been limited to the use of synthetic pesticides. Some hazardous pesticides are readily available and widely used in African

countries. These products pose unacceptable risks to human health and the environment. The experience from last seasons allowed a review of pesticides being used for FAW and recommendations have been developed for coming seasons. The recommended practices and actions are synthesized into key concepts and messages and form the basis of extension and learning-by-doing activities with extension workers and farmers.

35. Regulatory actions to ensure that pesticides already authorized and used do not pose unacceptable adverse effects on human health and the environment. Ensure that appropriate (efficient and low risk) pesticides are registered for use being key to the long term sustainability of FAW management. Advice to countries and regulators regarding pesticides have been provided.

36. Registrars need support in reviewing the current registrations to eliminate pesticides that pose unacceptable risks in their use and in quickly reviewing new products, especially bio-pesticides which have been developed, tested, and registered in other countries which offer effective, economical, lower risk options.

37. Awareness creation is key in ensuring that as many farmers as possible are aware of the available management options. Communication materials for extension have been developed jointly with CABI.

38. Enabling farmers and promoting community action are important elements in the strategy to sustainably manage FAW. FFSs have been promoted by FAO for decades as platforms for farmers to learn and exchange. A FFS curriculum for FAW has been developed and will be translated into French and Portuguese and mass distributed and master trainers identified and trained. An inventory of FFSs across Africa has been carried out.

39. The capacity of many African countries to detect and react promptly to new pest invasions, through regular monitoring and early detection is often limited. A Technical Working Group of key partners and researchers has been established and provides advice on FAW monitoring and early warning system. As a first output of the work of this group an application for monitoring and early warning has been developed and validated and will be deployed in early 2018.

40. The use of pheromone lures and traps can be used to monitor populations and the data fed into a comprehensive data management system. Data collection should also come from field infestation estimates and both types of data can be easily uploaded via an application for mobile phones.

41. Coordination of FAW response in Africa is needed at multiple levels: local, national, regional and Africa-wide. A Framework for Coordination of FAW management has been developed and endorsed by the Specialized Technical Committee of the African Union. The Framework is being materialized using the output of Technical Working Groups that address key aspects of the response to FAW.

42. At national level, several countries have already adopted the approach of creating a National FAW Task Force or committee which includes research, extension, NPPOs, the private sector, farmers' organizations and others. In most of the countries, TCPs supported putting in place national taskforces and developing action plans for FAW.

V. Next steps/Priorities

43. A general priority for the coming seasons will be given to upscaling the best and proven practices and results to reach out to as many farmers as possible through strengthening countries' capacities in various areas of FAW management and to support countries to sustainably address the FAW challenge.

44. With specific regard to pesticides, lower risk pesticides, biopesticides and botanicals are a priority. On-farm testing and adaptation trials on efficacy of biopesticides are needed alongside

awareness raising and training on available options. This should also consider local sourcing, production and manufacturing of such options. For all of them, fast-tracking registration is key.

45. Research and development on biological control will also be a priority: inventory of natural enemies (predators, parasitoids, pathogens) of FAW in its new range in Sub-Saharan Africa. Quantification of their importance in FAW population management; identification of gaps and candidates for classical biological control introductions from the Americas. Local production and application of biological control agents, especially the egg parasitoid *Trichogramma*, Nuclear Polyhedrosis Virus (NPV) and *Bacillus thuringiensis* bacterium have to be explored and South-South Cooperation (Americas-Africa) will be key. In addition, trials are needed to determine the effectiveness of simple control methods such as use of ash, soaps, botanical extracts based on local plants, etc.

46. Assessments are urgently needed to better understand crop yield, production, and economic losses, as well as changes in household incomes, food access and availability, consumption patterns, and livelihoods-based coping strategies amongst affected populations. The impacts of the use of pesticides should be determined. Short-term actions will aim at refining and harmonizing impact assessment tools.

47. Rolling out the FFS curriculum for community outreach will be among the priorities. Sound understanding of biology and ecology of the pest, monitoring and surveillance at community and field level and fine-tuning management strategies underpin community action. The target for the five coming years is 10 million farmers through 40 000 FFS distributed among the three subregional FFS networks (Southern Africa, Eastern Africa and Western and Central Africa). FAW FFS work will be developed based on the FFS FAW Guide which will be translated into French and Portuguese and potentially local languages, and widely distributed in both print and digital formats.

48. Awareness raising and mass communication are to be continued and the strategy should include delivery of communication material in the form of posters, leaflets (in local language as needed) and through rural radios, Community Listener Clubs, other communitarian media and social media. This should also include low-cost, participatory training videos in local languages produced by communities themselves. Consistent messages across the public and across countries based on best knowledge have to be ensured and mass communication campaigns developed.

49. The Fall Armyworm Monitoring and Early Warning System (FAMEWS) will be tested in several pilot countries before its Africa-wide implementation. The system will help generate detailed and dependable knowledge on infestation levels, adult population levels, and their responses to local ecosystems and management. Data collection has to be standardized, including the use of standard pheromone lures and traps and use of standardized protocol for measuring infestation levels. A mobile app used by farmers, community focal persons and extension agents for data collection will be expanded to cover SMS-based mobile phones.

50. The operationalization of National taskforces or committees is key to allow them to efficiently coordinate preparedness and response through contingency planning, tailored to the specificities of the country. The activities developed towards this goal should be conducted involving the communities affected by FAW outbreaks.

51. FAO has prepared a five-year programme of action to help farmers, their organizations, their public institutions, national governments and development partners quickly respond to the challenges of FAW infestation in smallholder farmers' fields across Africa. The total cost of this Programme is estimated at USD 87.550 million.

52. At national level, FAO will facilitate the interactions between the countries and their bilateral donors. At regional level, a donor's round table will be organized in partnership with the African Union Commission and other relevant regional stakeholders to mobilize resources for medium and long terms activities of the programme.