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Fall Armyworm in Africa: status, potential impacts and global response

I. Status

1. Fall Armyworm (*Spodoptera frugiperda*), FAW, is an insect species native to tropical and subtropical regions of the Americas. It can cause significant yield losses if not well managed. FAW recently arrived in Sub-Saharan Africa (SSA) and was first confirmed in west and central Africa in early 2016. It has quickly spread since then and now infests millions of hectares of maize and sorghum in 44 countries of SSA in an area of more than 22 million km². Given its high mobility, it is likely that FAW will continue to spread, reaching Northern Africa, Southern Europe and the Near East. As a key pest of maize, it is causing significant concern among farmers, communities and governments. Caterpillars of the FAW are able to feed on more than 80 additional plant species, including rice, sorghum, millet, sugarcane, vegetable crops, and cotton.

II. Potential impact

2. The potential impact of FAW in Africa is large with many different risks involved. A particular challenge is that the pest feeds on several major food crops in Africa and has a very wide host range. Being new to Africa there is scant experience on the continent on how to manage it sustainably.

3. FAW prefers to attack maize, a staple for around half the continent's people. In SSA maize is grown on about 37 million ha, accounting for about 24 percent of the total arable land. Maize is the most important dietary source of calories and protein of an estimated 300 million people in Africa.

4. Over 98 percent of the tens of millions of sub-Saharan African maize farmers are smallholders. They often use mixed-cropping systems, farm-saved seeds of local varieties, and most do not use pesticides. Maize is typically grown for self-consumption and if excess is sold, it is usually done locally while farmers typically receive a low price for their production.

5. The potential yield loss due to FAW in a key African food security crop is significant: at 20 percent maize yield loss due to FAW infestation the annual production reduction across SSA would be approximately 16 million tons per year, with an estimated value of USD 4 800 million. The impact on household food and nutrition security and household livelihoods would be very high, given the dependency on maize for both.

*This document can be accessed using the Quick Response Code on this page;
an FAO initiative to minimize its environmental impact and promote greener communications.
Other documents can be consulted at www.fao.org*



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III. Global response

6. The potential impact of the spread of FAW in Africa has created pressure for immediate and quick response. Many countries acted fast, for example by procuring and giving away chemical insecticides to manage FAW. In some cases Highly Hazardous Pesticides were handed out for FAW immediate control. However, in the context of the African smallholder farmer pesticide use is associated with a number of relevant economic, environmental and human health risks.
7. A major effort needs to be undertaken to support countries in developing FAW integrated pest management approaches going beyond an immediate and fast response including aiming at minimizing the various risks associated with the use of pesticides.
8. Being native in the Americas, a range of measures have been developed and introduced for FAW management in this region of the world. In sustainably tackling FAW there is a great potential for South-South collaboration building on the experience made in the Americas. There are also many opportunities for innovative solutions, such as biological control approaches or the use of host plant resistance.
9. Locally adapted measures may also prove efficient against FAW, but there is a need to combine local solutions with innovative measures using applied research and validation involving relevant stakeholders.
10. As FAW is new in the African context a major effort needs to be made in research to identify, develop and validate a broad set of integrated FAW management options suitable for African smallholder farmer implementation.
11. FAO quickly responded to the threat of FAW in SSA, dedicating significant resources in supporting a local, national, regional, and global response. In 2017, FAO destined almost USD 12 million of the Regular Programme budget to this response including 34 TCP projects for a total of USD 8.76 million.
12. FAO has developed, in close collaboration with partners a Programme for Action for Sustainable management of FAW¹ covering a five-year period with costs estimated at USD 87 million. The programme was presented to donors at a Resource Partners Consultative Meeting on 28 November 2017 and is made up of six components:
- i) Management of FAW: Immediate Recommendations and Actions
13. To immediately enable farmers, governments and extension systems to cope with FAW they need sound technical and policy advice, among others to avoid the use of highly hazardous pesticides and the promotion of safer alternatives.
14. Based on a series of meetings involving international experts in 2017 and its own expertise, FAO prepared a Farmers Field Schools (FFS) guide on the Integrated Pest Management (IPM) of FAW in maize², The FFS Guide served as a basis for regional trainings of FFS Master Trainers.
15. The FAO FAW-website³ has become an important global portal of FAW information, coordination and updates. In addition to a regular Briefs, other key documents (Technical Guidance Notes, Q&A, Meeting Reports, the FAO Programme, maps, reports and guides) were made available on this website and supports countries to plan short-term actions.
- ii) Short-term research priorities: Testing and Validation of FAW Management Practices
16. FAO provides technical and policy advice on pesticide management and is involved in monitoring their use. This is of particular importance under conditions where pesticides are procured and distributed to avoid use of Highly Hazardous Pesticides. Moreover, a number of readily available local FAW management practices⁴ (use of plant diversity, conservation and use of naturally-occurring biological control agents, and use of locally-available materials) have been identified for further testing and validation, in formal research settings and FFSs.

¹ <http://www.fao.org/3/a-bt417e.pdf>

² <http://www.fao.org/3/I8665EN/i8665en.pdf>

³ <http://www.fao.org/food-chain-crisis/how-we-work/plant-protection/fallarmyworm/en>

⁴ <http://www.fao.org/3/CA0435EN/ca0435en.pdf>

iii) Communication and Training

From the beginning, FAO has given high priority to the production of reliable information material and its distribution to countries in support of awareness raising campaigns and in the reach of decision-makers, extension services and farmers. The material is also used for mass communication campaigns, also taking language requirements into consideration. Tens of millions of smallholder farmers rapidly need recommendations and tools to make good management decisions in their fields. Further awareness raising and mass communication campaigns are needed, farmer education through a number of fora (national extension programmes, plant health clinics, and Farmer Field Schools) must as rapidly as possible be implemented across the continent.

iv) Monitoring, Risk Assessment and Early Warning

17. FAO has developed the Fall Armyworm Monitoring and Early Warning System (FAMEWS) to be used by farmers and extension agents to collect data when scouting fields and checking pheromone traps via a mobile phone application. FAMEWS incorporates a tool to diagnose FAW damage and is linked to a web-based monitoring and early warning platform. FAMEWS has been rolled out in most African countries in early 2018. Training is being provided through FAO's FFSs and other projects. Nearly all Governments have designated a national FAW focal person responsible for FAMEWS data validation. Modern technologies are being considered to diagnose and monitor FAW damage such as drones or remote sensing.

18. FAO and the Department for International Development (DFID), United Kingdom, collaborated to develop a model for risk assessment for FAW. Data on prevalence of FAW in the field for the risk model is provided via the FAMEWS app.

v) Policy and Regulatory Support

19. FAO's support to countries in this area focuses on technical and policy advice on pesticide registration and use and on assistance in monitoring their use. FAO has facilitated discussions with pesticide registration systems regarding products for FAW use and has developed a Guidance Note on the use of pesticides for FAW.

20. FAO also provides guidance to national research organizations regarding priority research for the generation of knowledge and innovations for the management of FAW in close collaboration with major research partners.

vi) Coordination

21. FAO worked with many partners to develop a Framework for Partnership for the Sustainable Management of FAW, divided into several components. The framework brings together all partners into a coordinated and coherent structure, in which they can use their comparative advantages in complementary and synergistic ways. It was endorsed during the Second Conference of the African Union's Specialized Technical Committee (formerly the Ministerial Conference) on Agriculture, Rural Development, Water and Environment on 6 October 2017 and later by development partners at a Technical Partners Coordination Meeting, held in FAO Headquarters on 9 March 2018.

22. To strengthen coordination, FAO facilitated the establishment of a number of Technical Working Groups (TWG), each led by an appropriate institution/organization and composed of an international group of experts. The TWGs cover important thematic topics such as biological control and farmer training. They support the Framework for Partnership for the Sustainable Management of FAW and are putting more technical substance into the various components of the Framework.

23. FAO and global research partners already active in this area will also prioritize research and engage in the exchange of best technical expertise in order to identify and validate a broad set of FAW management options suitable for African smallholder farmer implementation.

IV. The challenge ahead

24. FAW continues to spread. Countries and an increasing number of farmers will be in need to learn to manage FAW sustainably in SSA and beyond. Massive education and communication campaigns are therefore necessary.

25. Possible management tactics must be tested and validated. Likewise, governments need support on pesticide policies and uses and national priorities in applied research. Data needs to be collected and interpreted to determine FAW prevalence levels and possible movement patterns. Monitoring and early warning systems need to be further deployed and implemented.
26. The short-term priorities are clearly laid out: Farmer education and communication, pesticide management as well as monitoring and early warning.
27. A challenge will be to coordinate and catalyse the knowledge, capacity, and innovation of all partners to apply the best knowledge, science and tools to manage the pest in the long term.
28. Another challenge will be to mobilize the necessary resources to move the framework and action plan into reality and help affected smallholder family farmers to sustainably manage FAW, build resilient cropping systems, and improve their household food security and livelihoods.