



Food and Agriculture  
Organization of the  
United Nations

# Fall Armyworm Monitoring and Early Warning System (FAMEWS)

Guidance  
note 10

A mobile app and global  
platform for monitoring FAW

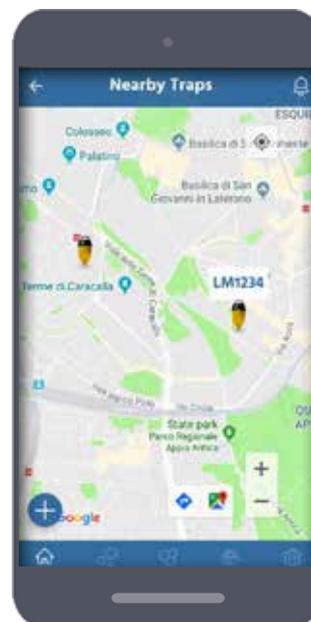


“ Food and Agriculture Organization of the United Nations (FAO) Director-General Qu Dongyu:  
Emerging digital technologies present an opportunity to make breakthrough advances. ... A recent example of successfully disseminating and scaling-up innovative approaches by FAO is the implementation of fall armyworm early warning and monitoring systems. With all the effort(s) ... we can stop the loss caused by the fall armyworm. ”

**Fall armyworm (*Spodoptera frugiperda*) (FAW) is an insect native to tropical and subtropical regions of the Americas. Without natural controls or good management, FAW can cause significant damage to crops. It prefers maize, but it can feed on more than 80 additional species of crops, including rice, sorghum, millet, sugarcane, vegetable crops and cotton.**

FAW was first detected in Central and West Africa in early 2016 (Benin, Nigeria, Sao Tome and Principe, and Togo) and further reported and confirmed in the whole of mainland southern Africa (except Lesotho), Madagascar and Seychelles. In July 2018, FAW was confirmed in India and Yemen, and within six months FAW had spread to Sri Lanka, Bangladesh, Myanmar, Thailand and China. In early 2020, it was reported in Australia, Mauritania, Timor-Leste and United Arab Emirates. Today, in Africa and Asia, maize is the crop most infested with FAW. Because it is a staple crop, farmers and their families are unlikely to abandon it. However, there are ways of managing FAW in maize, as demonstrated in the Americas.

Fall Armyworm  
Monitoring and Early  
Warning System  
(FAMEWS) tool





The Food and Agriculture Organization of the United Nations (FAO) is taking an active role in coordinating partners' activities, plans and approaches to provide sustainable solutions to the FAW challenge. An integral part of FAO's Global Action for Fall Armyworm Control is the FAW Monitoring and Early Warning System (FAMEWS), which consists of a mobile app for data collection and a global platform for mapping and analysing the collected data.

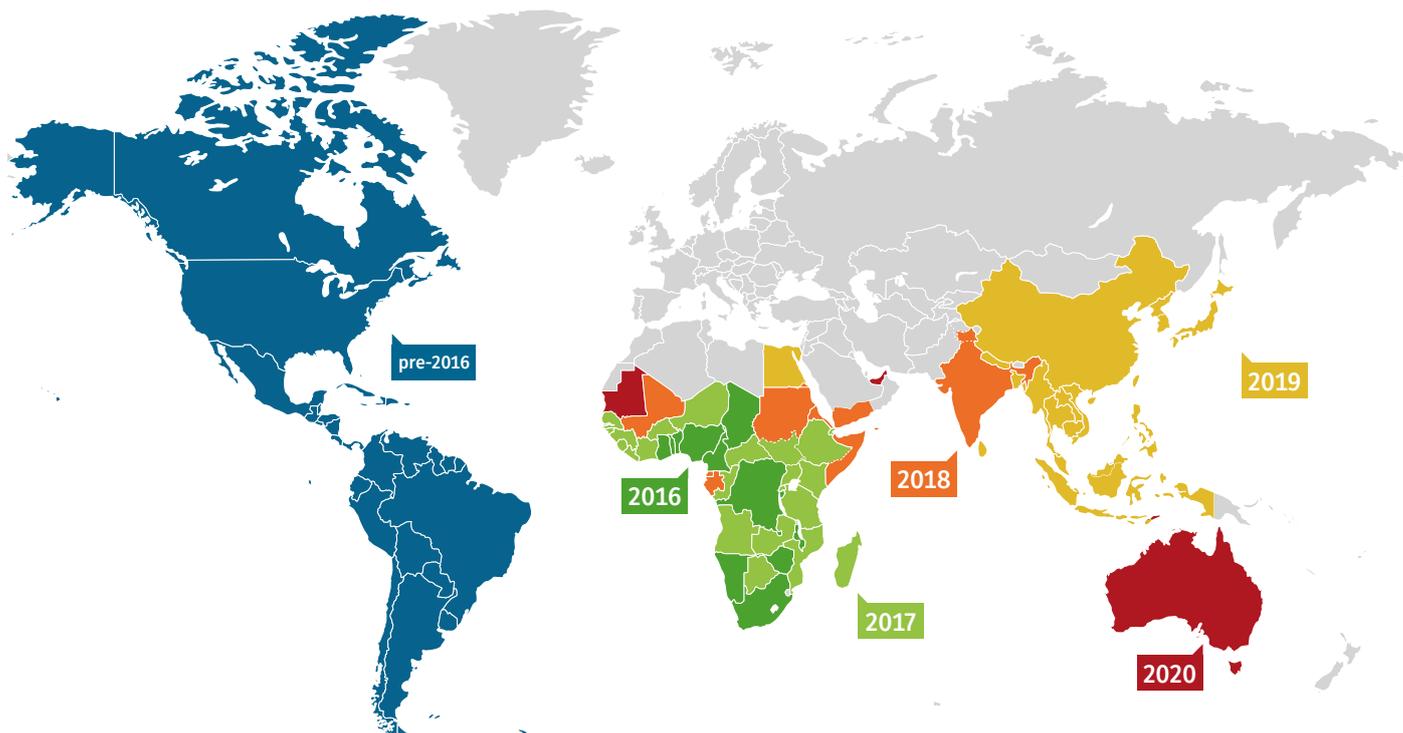
### FAMEWS mobile app

FAO has developed the **FAW Monitoring and Early Warning System (FAMEWS) mobile phone app** to be used by farmers, community focal persons and extension agents to send vital data about FAW infestation levels. This helps generate detailed and reliable information that can be used to manage FAW. The FAMEWS mobile application should be used whenever a field is scouted and pheromone traps are checked for FAW.

### The app provides these functions:

- 1 data entry – to collect, record and transmit data concerning:
  - farm and crop information
  - scouting (manual and using artificial intelligence)
  - traps
- 2 integrated pest management (IPM) training
- 3 digital library
- 4 chat (to share experiences)
- 5 expert resources

Data are entered by making selections from drop-down lists. Each item is accompanied by a useful explanation that may also include photographs (for example, of different



Spread of FAW as of July 2020. Map conforms to United Nations No. 4170 Rev. 18.1 map, February 2020

*The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers and boundaries. Dashed lines on maps represent approximate border lines for which there may not yet be full agreement.*

pests and natural enemies) to help the user enter accurate data. The app is highly intuitive, easy and fast to use. It is currently available in 31 languages and can include further languages on demand. FAMEWS can be downloaded free of charge from the Google Play store. There are almost 10 000 registered FAMEWS users.

To ensure the accurate collection of high-quality and reliable data, standardized protocols have been developed as guidance notes for scouting and checking pheromone traps. This is further enhanced by Nuru, an artificial intelligence module that guides farmers in scouting fields and helps them to recognize plants that are infested by FAW.

Once there is a cellular network, or an Internet connection has been established, collected data can be transmitted to a centralized cloud for validation by national FAW focal points. Then, it is made available for further analysis, mapping and decision-making at farmer, community and national levels. FAMEWS is designed to expand with the evolving needs of farmers, analysts and decision-makers. New updates focus on making the app more useful and educational for farmers, communities and agricultural extension agents, as well as providing advice and maps of nearby FAW infestations.

## FAW global platform

The FAW global platform is an open access, online resource for mapping data collected by the FAMEWS mobile app whenever fields are scouted or pheromone traps are checked for FAW. The platform provides a near real-time situation overview, with maps and analytics of FAW infestations at global and country levels. An additional level of aggregation for the sub country level is also available. The best and most effective strategy for managing FAW involves taking preventive measures and immediate action when FAW is detected. The actions taken are actively monitored and compared with the level and extent of infestation; this monitoring acts as a decision support system regarding the most appropriate management options.

The data and maps provide valuable insights on how FAW populations change over time with ecology, which helps users to better understand the pest's behaviour and choose best management options. Similar to the mobile app, the global platform is designed to expand with the evolving needs of farmers, analysts and decision-makers. It is freely accessible to everyone.



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## What are next steps for FAO FAW work?

FAW's presence in Africa and Asia is irreversible. Large-scale eradication efforts are neither appropriate nor feasible. Gathering and analysing experiences and best practices from the Americas contributes to the design and testing of a sustainable FAW management programme for smallholder farmers.

FAO is working with research organizations and farmer-led groups, such as farmer field schools, to continue the co-creation and validation of sustainable FAW management practices by smallholders. The best recommendations will be communicated and shared with farmers, farmers' organizations and governments. There are many ways to manage FAW sustainably. Good management will depend on good knowledge, observation, innovation and action.

## Key facts

- Fall armyworm (FAW) is a dangerous transboundary pest with a high potential to spread rapidly due to its natural spread capacity and opportunities presented by international trade.
- Farmers need significant support to manage FAW sustainably in their cropping systems through integrated pest management (IPM) activities. FAW cannot be eliminated.
- FAO has launched a Global Action for FAW Control as a response to the international threat that FAW is posing for food security and the livelihoods of millions of smallholder farmers.
- The FAW Monitoring and Early Warning System (FAMEWS) mobile app is free, works offline and provides farmers with advice on how to manage FAW.
- Some pesticides being used against FAW are very toxic to humans and may cause environmental contamination. Their handling, use and disposal always require special care. Farmers must understand that pesticides can be counter-productive in managing FAW.

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## MORE INFORMATION

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