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# FAMEWS: A MOBILE APP FOR MONITORING & EARLY DETECTION OF FALL ARMYWORM

Fall Armyworm (FAW) (*Spodoptera frugiperda*), is an insect pest of more than 80 plant species, causing damage to economically important cultivated cereals such as maize, rice, sorghum, and also to vegetable crops and cotton. It is the larval stage of the insect that causes the damage. FAW reproduces at a rate of several generations per year, and the moth can fly up to 100 km per night.

The insect pest is native to tropical and subtropical regions of the Americas.

In the African continent, it was first detected in Central and Western Africa in early 2016. By early 2018, only 10 out of the 54 African states and territories had not reported infestations by the invasive pest.

Maize is now the most infested crop in Africa. As a staple crop, it is unlikely that farmers and their families will want to abandon maize.

FAO and its partners have been at the forefront of tackling FAW and continue

to support prevention, early warning, and effective response.

An integral part of FAO's sustainable management programme for FAW in Africa is the FAW Monitoring and Early Warning System (FAMEWS) mobile app. Data from the app provides valuable insights on how the insect populations change over time with ecology, to improve knowledge of its behaviour in Africa and guide best management.

## FAW MONITORING AND EARLY WARNING SYSTEM

Given its demonstrated expertise and experience in continental-wide and global early warning systems for agricultural transboundary pests, FAO took the lead in the development and establishment of the FAW monitoring and early warning system and utilized the specific expertise of other institutes.

The monitoring component of the system is being established

within the context of existing community Integrated Pest Management (IPM) programmes such as Farmer Field Schools (FFS) and community-based systems.

The system consists of field data, collected at the farm level, that are collated so that they can be shared and analysed at local, national, and global levels in order to produce useful information in the form of relevant advice for management and early warning for all stakeholders.

# KEY FACTS

## FAMEWS

THE FAMEWS SYSTEM CONSISTS OF A MOBILE APP AND A GLOBAL MAPPING PLATFORM THAT SUPPORTS FAW MANAGEMENT FROM MONITORING AND EARLY WARNING TO RESPONSE AND RISK ASSESSMENT

FAMEWS IMPROVES KNOWLEDGE OF FAW BEHAVIOUR IN AFRICA AND GUIDES BEST RESPONSE

TO USE THE FAMEWS MOBILE APP, THERE'S NO NEED OF INTERNET OR CELL NETWORK CONNECTION

THE APP ONLY CONNECTS TO THE INTERNET OR CELL SERVICE WHEN IT SENDS DATA, THEREFORE, THE COST IS SIMILAR TO A CHAT MESSAGE

INFORMATION COLLECTED DURING FIELD SCOUTING AND WHEN CHECKING PHEROMONE TRAPS NEEDS TO BE CAREFULLY RECORDED IN THE MOBILE APP

## FAO/FAMEWS

### MOBILE APP AND TRAINING KIT

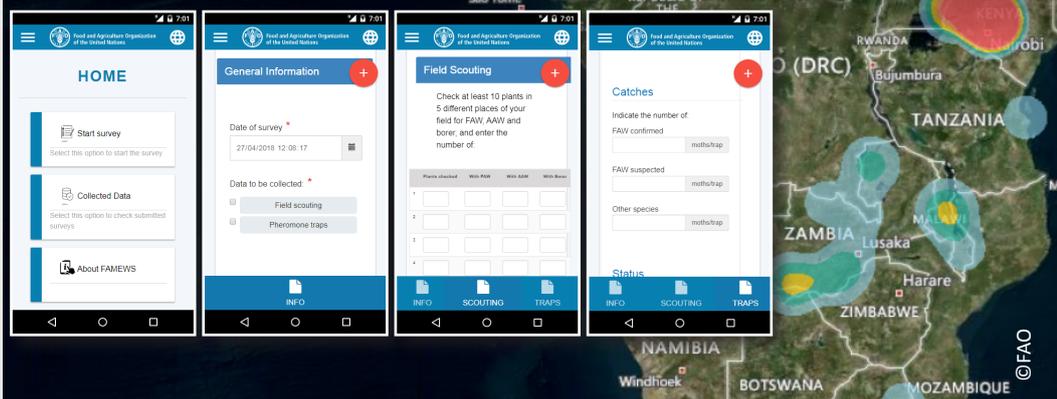
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## FAMEWS: A MOBILE APP FOR MONITORING & EARLY DETECTION OF FALL ARMYWORM



Only farmers in their fields can successfully sustainably manage FAW. FAO has led the formation of FFSs across Sub-Saharan Africa for over twenty years. Thousands of field schools have successfully worked with hundreds of thousands of smallholder family farmers to sustainably manage their production systems. FAO will bring FAW management to the thousands of existing field schools, and expand into the most affected FAW areas, based on a unified curriculum linked to monitoring and continuous feedback and improvement.

### FAMEWS MOBILE APP: HOW IT WORKS

FAMEWS mobile app, a critical tool for FAW management, allows for the collection, recording, and transmission of field data by farmers either as individuals or organized as communities such as FFSs and other community-based programmes. This tool is simple, straightforward, intuitive, and easy to maintain and update.

Field data are collected in order to (i) determine FAW presence at the local, district, national, and regional levels, (ii) take immediate action, (iii) monitor FAW movements and spread, (iv) identify gaps in monitoring, (v) identify potentially threatened areas or areas at risk, and (vi) provide forecasts and early warning.

The app is useful on two fronts: for farmers and agricultural workers in the direct management of their crops to prevent further infestations and reduce damage; and for all actors involved in managing FAW in Africa, by providing vital analysis on risks, spread, and management.

This app should be used whenever a field is scouted or pheromone traps are checked for FAW.

**Field scouting** consists of inspecting 50 plants in a field by farmers, community focal points, agricultural extension agents, and others and recording relevant data.

**Checking pheromone traps** involves counting the number of adult male FAW moths that have been caught. Pheromone traps are not a substitute for field scouting.

Once farmers and workers check their crops for infestations and enter the required data, the app calculates infestation levels so that farmers can take actions to better manage the situation.

The data are validated by national FAW focal points in each country and transferred to a global web-based platform. They are then analyzed to give a real-time situation overview with maps of FAW infestations and the measures that are most effective in reducing its impact.

Initially implemented in Madagascar and Zambia, the app is now being rolled out across all countries in Sub-Saharan Africa affected by the invasive pest through the FAO-supported FFSs as well as other community-based forums leading the fight against FAW.

### WHAT IS NEXT?

Updates to the app will provide additional functionality such as an advisory system that informs the user and provides guidance, and a diagnostic tool that uses the camera of the mobile phone to determine FAW infestation levels to maize. The app is designed to expand with the evolving needs of farmers, analysts, and decision-makers.