

Situation Update on Emergency Transboundary Outbreak Pest (ETOP) for September, 2017 with a Forecast till mid-November, 2017
résumé en français est inclus

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹) situation remained generally calm in Western Outbreak Region (**WOR**) where only small-scale breeding occurred in **Niger, Mauritania** and in **Algeria** where 34 ha were treated.

In Central Outbreak Region (**COR**), a few scattered adults were detected in summer breeding areas in **Sudan**. No locusts were reported elsewhere in the region during September.

In Eastern Outbreak Region (**EOR**), low numbers of adult SGR were detected in summer breeding areas in **Pakistan** bordering **India** and in southeast **Iran** during September.

Forecast

In **WOR**, limited breeding may occur in areas where ecological conditions are favorable, but significant developments are not likely during the forecast period.

In **COR**, a few adults may concentrate in patches of green vegetation on the Red Sea coasts in **Sudan, Eritrea, Saudi Arabia** and **Yemen** and breed

¹ Definitions of all acronyms can be found at the end of the report.

on a small-scale, but the situation will generally remain calm during the forecast period.

In **EOR**, significant developments are not expected during the forecast period.

Fall armyworm (FAW) (*Spodoptera frugiperda*) (**SFR**): SFR (FAW) outbreaks continued attacking maize crops in **Ethiopia, Kenya, Malawi, Uganda, Zambia** and **Zimbabwe** during September and control operations were effected with assistance from the MoAs. Although updates were not received from other maize growing countries across Africa, it is likely that the pest is causing problem to maize crops there as well **(for further detail, please, refer to pages 7-12)**.

Red (Nomadic) Locust (*Nomadacris septemfasciata*) (**NSE**): NSE swarm concentrations persisted in **Malawi, Mozambique, Tanzania** and **Zambia** during September and a swarm was observed flying westward in southern **Malawi** on September 19th.

African Armyworm (AAW): AAW outbreaks were not reported during September. The pest will likely begin appearing in the southern outbreak region during the forecast period.

Italian (CIT), Moroccan (DMA), Asian Migratory (LMI) Locusts: No update was received at the time this report was compiled, however, it

is expected that locust activities continued winding down in most of the CAC countries during September (OFDA/PSPM).

Note: Tomato leaf miner (*Tuta absoluta* - TAB) a pest native to the tropical South America and alien to the African continent was first detected in Sprain in 2006. It has since reached dozens of countries across Africa, Europe, Mediterranean, Middle East, Asia and Pacific and will likely continue to spread further. **End note.**

Quelea birds (QQU): QQU outbreaks were reported attacking irrigated sorghum in **Kenya** and wheat in **Zimbabwe** during September.

Active surveillance and monitoring as well as timely preventive interventions remain critical to abate any threats ETOPs pose to crops and pasture.

USAID/OFDA/PSPM regularly monitors ETOPs in close collaboration with its network of national PPDs/DPVs, regional and international pest monitoring organizations, including FAO, CLCPRO, CRC, DLCO-EA, and IRLCO-CSA and provides timely analytical reports, updates to various stakeholders across the globe. **End summary**

RÉSUMÉ

La situation du Criquet pèlerin (*Schistoseca gregaria* - SGR) est restée généralement calme dans la

région de Western Outbreak (WOR) et seule une reproduction à petite échelle s'est produite dans Niger, dans Mauritanie et d'Algérie où les opérations de contrôle ont traité 34 ha.

Dans la région de l'éclosion centrale (COR), quelques adultes dispersés ont été détectés dans les zones de reproduction estivale au Soudan. Les opérations d'enquête n'étaient pas possibles au Yémen. Aucun criquet n'a été signalé ailleurs dans la région en septembre.

Dans Eastern Outbreak Region (EOR), un faible nombre de criquets adultes ont été détectés dans les zones de reproduction estivale au Pakistan en bordure de l'Inde et en Iran en septembre.

Prévoir

Dans WOR, une reproduction limitée peut se produire dans les zones où les conditions écologiques sont favorables, mais des développements importants sont improbables pendant la période de prévision.

En COR, quelques adultes peuvent se concentrer dans des taches de végétation verte sur les côtes de la mer Rouge au Soudan, en Erythrée, en Arabie Saoudite et au Yémen et se reproduisent à petite échelle, mais la situation restera généralement calme pendant la période de prévision.

Dans EOR, des développements significatifs ne sont pas prévus pendant la période de prévision.

Chenille légionnaire d'automne (FAW) (*Spodoptera frugiperda*) (SFR): des flambées de SFR (FAW) épidémies de SFR (FAW) ont continué d'attaquer des cultures de maïs en **Éthiopie**, au **Kenya**, au **Malawi**, en **Ouganda**, en **Zambie** et au **Zimbabwe** en septembre et les opérations de contrôle ont été effectuées avec l'aide des Moa. Bien que des mises à jour n'aient pas été reçues d'autres pays producteurs de maïs en Afrique, il est probable que le ravageur cause également des problèmes sur maïs (pour plus de détails, voir pages 7-12).

Rouge (Nomadic) Locust (*Nomadacris septemfasciata*) (NSE): les concentrations d'essaims NSE ont persisté au **Malawi**, au **Mozambique**, en **Tanzanie** et en **Zambie** en septembre et un essaim a été observé en direction ouest dans le sud du Malawi le 19 septembre.

Cheille Légionnaire Africaine (AAW): Les épidémies d'AAW n'ont pas été signalées dans en septembre.

Italien (CIT), Marocaine (DMA), Migrateurs asiatiques (LMI)
Criquets: Aucune mise à jour n'a été reçue au moment où ce rapport a été compilé; toutefois, il est probable que les activités acridiennes se dégradent dans la plupart des pays de la CCE en septembre.

Note: Le mineur de feuilles de tomates (**Tuta absoluta - TAB**, est un organisme nuisible originaire de l'Amérique du Sud tropicale et étranger au continent africain. Il a été détecté pour la première fois à Sprain en 2006. Il a déjà atteint des dizaines de pays à travers l'Afrique, l'Europe, la Méditerranée, le Moyen-Orient, l'Asie et le Pacifique et continueront probablement à se répandre davantage. **Fin de la note.**

Quelea (QQU): des flambées de QQU ont été signalées attaquant le sorgho irrigué au Kenya et le blé irrigué au Zimbabwe en septembre.

La surveillance actives ainsi que les interventions préventives en temps voulu restent essentielles pour réduire les menaces que les ETOP posent aux cultures et aux pâturages.

L'USAID / OFDA / PSPM surveille régulièrement les ETOP en étroite collaboration avec son réseau de PPD / DPV nationaux, les organismes régionaux et internationaux de lutte antiparasitaire, dont la FAO, le CLCPRO, le CRC, le DLCO-EA, l'IRLCO-CSA et fournit des rapports analytiques, des mises à jour à divers les parties prenantes autour de monde. **Résumé final**

OFDA's Contributions to ETOP Activities

The online Pesticide Stock Management System (PSMS) that was developed with financial assistance from USAID/OFDA and other partners has been installed in

some 65 countries around the globe and is helping participating countries maintain inventories. Thanks to this tool many counties have been able to avoid unnecessary procurements and stockpiling of pesticides and helping them avoid costly disposal operations and improve safety and well-being of their citizens and shared environment.

The USAID/OFDA funded community-based armyworm monitoring, forecasting and early warning (CBAMFEW) project that was concluded last September has been incorporated in the annual work plan of the national crop protection departments in all participating countries <http://bit.ly/1C782Mk>. The project enabled farmers to detect and report AAW and prevent major crop/pasture damage. Participating countries continue expressing their gratitude for having the project implemented in their countries. USAID/OFDA/PSPM will maintain a line of communication with participating countries and monitor progresses.

OFDA/PSPM is working with interested parties to explore means and ways to expand this innovative technology to other AAW affected countries and to benefit farmers and rural communities.

OFDA/PSPM's interests in sustainable pesticide risk reduction in low income countries to strengthen their capacities and help improve safety of vulnerable populations and shared environment continued. It intends to expand this initiative to other parts of Africa, the Middle East, CAC, etc., as needed. OFDA continued its support for DRR programs to strengthen national and regional capacities for ETOP operations. The program which is implemented through FAO has assisted several

frontline countries to mitigate, prevent, and respond to ETOP outbreaks. It has helped participating countries avoid from misuse and mishandling of pesticides, pesticide-incorporated materials and application platforms.

*USAID/OFDA-sponsored project implemented by FAO to strengthen national and regional capacity for locust control and prevention and help more than 25 million people in Caucasus and Central Asia (CAC) live of agriculture and livestock ended this month. The project has promoted and created collaboration among neighboring countries for joint monitoring, surveillance, reporting and preventive interventions for three major locust species in the region. Thanks to this project, dozens of technical staff from **Sahel West Africa, Northwest Africa, Eastern and Northeastern Africa, CAC, and the Middle East** were trained in health and safety of rural communities and monitoring environment in ETOP operations and PSMS management.*

Note: ETOP SITREPs can be accessed on USAID Pest and Pesticide Management website: <https://www.usaid.gov/what-we-do/working-crises-and-conflict/responding-times-crisis/how-we-do-it/humanitarian-sectors/agriculture-and-food-security/pest-and-pesticide-monitoring>

Weather and Ecological Conditions

WOR: Although annual vegetation distribution and coverage was less dense due to rainfall deficit ecological conditions remained favorable for the survival and reproduction of SGR over vast areas from the south-east to the central Mauritania. Good rain was reported in southern

Morocco during the last two decades of September and creating favorable ecological in Ziz and Ghrib Valleys (**CNLA/Mauritania, CNLAA/Morocco, CNLA/Tunisia, FAO-DLIS, NCLC/Libya**).

COR: Good rain was reported in Sudan and vegetation was green or greening in most of the areas surveyed as well as in irrigated areas along the Nile valley and Atbara seasonal river. Good rains also fell on the Red Sea coasts in Yemen and Saudi Arabia, the highlands in Eritrea, eastern Ethiopia and northern Somalia during September (DLMC/Oman, DLMCC/Yemen, FAO-DLIS, PPD/Sudan).

EOR: Light showers were reported in Rajasthan, India and overall ecological conditions remained favorable along the Indo-Pakistan borders due to heavy rains from previous months (FAO-DLIS).

NSE Outbreak Region: Heavy rains were reported in Uganda and Kenya and warm and dry weather with relatively higher temperatures prevailed in some of the NSE outbreak countries during September (IRLCO-CSA).

Note: *Combinations of precipitation, warm weather and green vegetation MUST be closely watched as this mix coupled with the seasonal wind trajectory can favor, breeding and facilitate migration and further spread of the new pest – **Fall Armyworm**. **End note.***

http://www.cpc.ncep.noaa.gov/products/international/casia/casia_hazard.pdf

Note: *Changes in the weather pattern and the rise in temperature can contribute to ecological shift in ETOP habitats and increase the risk of pest*

outbreaks, resurgence and emergence of new pests. In Uzbekistan, Moroccan locust (DMA) which is normally a low to medium altitude pest has shown a considerable vertical habitat expansion by up to 1,000 feet or 300 meters from its normal ambient altitude due to warmer higher elevations.

*The **Asian migratory locust**, an insect that normally breeds just once a year, recently began exhibiting two generations per year. These anomalies which are largely attributed to the change in the weather pattern and associated ecological shift, are serious concerns to farmers, rangeland managers, crop protection experts, development and humanitarian partners and others. Regular monitoring, documenting and reporting anomalous manifestations in pest behavior and habitat shifts remain critical to help avoid and minimize potential damages to crops, pasture and livestock and reduce subsequent negative impacts on food security and livelihoods of vulnerable populations and communities. **End note.***

Detailed Accounts of ETOP Situation and Forecast for the Next Six Weeks

SGR – WOR: The SGR situation remained generally calm in WOR during September. Only small-scale breeding occurred in northern **Niger**, western **Mauritania** and near irrigated fields in the central Sahara of **Algeria** where control operations treated 34 ha. Low numbers of immature and mature adults and a few instars were detected in the south and central parts of **Mauritania** as most have already moved northward towards winter breeding areas. No locusts were reported in Libya, Mali, Morocco or Tunisia in September (CNLA/Mauritania,

CNLAA/Morocco, CNLA/Libya, CNLA/Tunisia, FAO-DLIS).

Forecast: Drying up of vegetation will continue forcing locusts to move northward and concentrate and perhaps start breeding on small-scale in parts of western Mauritania, southwestern Morocco and southern Algeria. Small groups of adult SGR may also appear in patches of green vegetation in northern Niger and Mali, but significant developments are not expected during the forecast period (CNLAA/Morocco, CNLA/Mauritania, CNLA/Libya, CNLA/Tunisia, FAO-DLIS).

SGR (Desert Locust) - COR: Scattered immature and mature adults were detected in summer breeding areas in Kordofan, Red Sea, River Nile and White Nile States in **Sudan** during September. No locusts were reported in Djibouti, Egypt, Eritrea, Ethiopia, Oman or Somalia during this period. The situation in Yemen remained unclear as surveys could not be conducted due to ongoing security problem (DAF/Djibouti, DLCO-EA, DLMCC, FAO-DLIS, LCC/Oman, PPD/Sudan).

Forecast: Locusts will likely concentrate and form small groups and begin breeding on a small-scale in winter breeding areas along the Red Sea coasts in **Sudan, Eritrea, Yemen** and **Saudi Arabia**, and perhaps in southeast **Egypt**. Some may also appear on the Gulf of Aden coastal plains in southern Yemen and in northwest Somalia and breed, but significant developments are not likely during the forecast period (DLMCC, FAO-DLIS, LCC/Oman, PPD/Sudan).

SGR - EOR: The SGR situation remained calm in EOR and only low numbers of

adults were present in the summer breeding areas in **Pakistan** near the Indo-Pakistan border. Scattered mature adults were observed mating in southeastern **Iran** during September (FAO-DLIS).

Forecast: In EOR, significant developments are not likely during the forecast period (FAO-DLIS).

Active monitoring, timely reporting and preventive interventions remain critical to abate any major developments that could pose serious threats to crops and pasture in areas where locust activities are present.

*The **USAID/OFDA-FAO-DLCO-EA** sponsored emergency desert locust management project in the Horn of Africa is showing progress. Technical and material supports that have been provided to participating frontline countries are strengthening capacity to better monitor, report, prevent, and abate locusts in the sub-region.*

Red (Nomadic) Locust (NSE): NSE swarm was observed flying westward in Mulange Districts in southern **Malawi** bordering **Mozambique** on September 19 and further migration could threaten sugarcane plantation in the western part of the country. IRLCO-CSA and MoA/Malawi are preparing to launch control interventions. Concentrations of swarms also persisted in the Lake Chilwa/Lake Chiuta plains along **Malawi** and **Mozambique** borders; Ikuu-Katavi plains, Rukwa Valley, Bahi Valley, and Malagarasi Basin in **Tanzania**; Buzi Gorongosa, and Dimba plains in **Mozambique** and the Kafue Flats in **Zambia**. No information was received on

crop damage at the time this report was compiled (IRLCO-CSA, OFDA/PSPM).

Forecast: Vegetation burning in NSE outbreak areas will continue to force locusts to further concentrate. If left unabated, some of the swarms will likely migrate and invade neighboring areas. Active monitoring and timely preventive interventions remain critical to avoid crop damage (IRLCO-CSA, OFDA/PSPM).

IRLCO-CSA, the regional entity in the southern Africa ETOP outbreak region with the mandate to survey, monitor, help prevent and control locusts, armyworm and quelea birds, continues appealing to its member-states to avail resources to carry out timely surveillance and control interventions. It is in the interest of all concerned countries and partners that IRLCO-CSA member-states choose to respond to the Organization's appeal for resources to prevent these pests successfully and contribute to food security of vulnerable populations (IRLCO-CSA, OFDA-AELGA).

Madagascar Migratory Locust (LMC): No update was received at the time this report was compiled.

www.fao.org/emergencies/crisis/madagascar-locust/en/

<http://www.fao.org/emergencies/resources/videos/video-detail/en/c/430729/>

Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC): No update was received at the time this report was compiled, however, it is likely that DMA has progressively disappeared and CIT mating had ended or was winding down and the LMI egg laying is expected to

have been completed or completing during September (OFDA/PSPM).

Forecast: All three locust species will be ending in CAC and the situation will remain calm till next spring (OFDA/PSPM).

Note: Italian, Migratory and Moroccan locusts and some grasshopper species are a constant threat to the CAC region. They profusely multiply and attack tens of millions of hectares of crop and pasture and adversely affect food security and livelihoods of more than 20 million vulnerable inhabitants that eke out a living primarily from farming and herding. With the ability to travel more than 100 km (60 miles) each day, these locusts can decimate dozens of hectares of cereal crops, pasture, cotton, fruit trees, leguminous plants, sunflower, tobacco, vineyard, vegetable and others over vast areas. Many CAC countries affected by these locusts lack robust and well established capacity to effectively prevent and control these pests, but do their level best and invest tremendous amounts of resources to keep these pests under control. USAID/OFDA has helped strengthen national and regional capacity in CAC region to help abate these beasts. End note.

Fall armyworm (FAW) (Spodoptera frugiperda) (SFR):

Fall Armyworm (SFR) infestations were reported in irrigated cereal crops in Kilimanjaro, Arusha and Manyara, Mbeya, Iringa and Rukwa regions in **Tanzania** during September. Infestations were also reported in maize and/or sorghum fields in **Uganda** and parts of **Kenya** where MoA/national plant protection officers continued providing technical assistance

to affected farmers via demonstrations and through media outlets. In **Ethiopia**, as of September 25, new FAW infestations were reported in two additional administrative regions – Afar and Somali - where maize crops in 9 villages in 4 Districts were affected. To date, more than 646,740 ha have been reported affected in 8 of the 9 administrative regions of Ethiopia. Control operations were launched on more than 617,056 ha (253,572 with chemical and 363,483 ha through mechanical means). FAW outbreaks were also reported in irrigated maize crops in Malawi, Zambia and Zimbabwe during September. Control operations were launched by affected farmers with technical and material assistance from the Ministries of Agriculture (IRLCO-CSA). FAW was reported invading sorghum crops in Gadarif, Sudan and detected in maize crops in Mali (PPD/Ethiopia, PPD/Sudan). Crop loss data was not available from these countries at the time this report was compiled.



SFR (FAW) larva (file photo K State R and E)

To date, more than twenty eight countries across Africa have confirmed the presence of FAW, the most recent being the Republic of Sudan and Mali. A few more countries have also suspected

the presence of the pest, but have yet to confirm pest identity (FAO/SSD, IRLCO-CSA, IRLCO-CSA, OFDA/PSPM, PPD/Ethiopia, PPD/Sudan, PPD/South Sudan).

Forecast: SFR will continue spreading across Africa attacking late planted, irrigated and in-season crops where ecological conditions are favorable. If left unattended, infestations that were reported in eastern Sudan and eastern Ethiopia will likely spread to neighboring countries during the forecast period. With its ability to migrate far distance and taking advantage of seasonal winds and strong currents, the pest will likely continue expanding its infestation range and threaten various crop species within its host range in its new territories.

Vigilance monitoring, surveillance and timely reporting and information sharing as well as preventive interventions remain critical to abate any major damage the pest could cause to crops.

Potential Impacts of SFR on food security and the economy

Comprehensive crop loss assessments have yet to be extensively conducted. However, CABI, in its latest Evidence Based note, updated as of September, 2017, estimates the potential impact of unabated FAW invasions at a total loss of 8.3 – 20.6 million tons of maize per year at an estimated value of 2.5 – 6.2 billion USD in just 12 major maize producing countries in Africa (the estimates are extrapolated from studies conducted in Ghana and Zambia). Such losses can significantly impact food security, livelihoods and economic of farming communities, more so that of small-scale farmers. In most countries across Africa,

small-scale and subsistence farmers are already hammered by multiple stressors, including drought and flooding associated with El Nino and La Nina and any additional burden can undoubtedly further exacerbate the problem.

more so in countries that are severely resource challenged in sub-Saharan Africa. Abating, preventing and effectively managing this pest require well organized, concerted and beyond-a-single-country efforts.

Facts and phenomena about FAW

*FAW was first reported in southcentral West Africa – **Nigeria, Benin, Sao Tome and Principe**, and **Togo** and later in and **Ghana** from early 2016 on. The FAW larval specimens that were collected in **Togo** where identified by scientist at the US Department of Agriculture (USDA) at its Agricultural Research Services (ARS) as genetically similar (haplotype) to those in Central America and southeastern states of the United States (Nagoshi et al. 2017). It has yet to be determined whether caterpillars that affected crops in Southern Africa, Eastern Africa and Central Africa were the same as those identified in Togo and Nigeria or are of different haplotypes.*

FAW adult moth can travel up to 100 km/day looking for favorable conditions to feed and breed. It has the capacity to reach more than 1,000 km during its life and even further with the support of strong storms and trade winds.

The likelihood of this pest appearing on the continent more often is high due to its ability to bypass diapaus and continuously breed under favorable conditions. This will be further exacerbated by the presence of late planted and irrigated maize and other crops in different regions across the continent. Comprehensive assessments have yet to be conducted to determine the impact of SFR on crops and pasture, efforts must be made at all levels to remain vigilant and implement appropriate interventions to minimize crop losses.



Maize plant damaged by SFR (PPD/SSD, July, 2017)

Countries that have installed pheromone and other traps are urged to continue managing the traps and reporting on moth catches. Field inspections and scouting by the extension staff as well as farmers are encouraged to determine the presence of the pest in their respective regions and share pest information as quickly and regularly as possible

FAW is not a single farmer's or a single community's or a single village's or even a single country's pest. It is a trans-regional pest that needs collective efforts,

If established on the continent, a phenomenon that appears to be highly likely given the presence of the favorable ecological and climatological conditions across sub-Saharan Africa coupled with the biology and feeding habit of this

aggressive and fast spreading pest, it will continue severely affecting food security and livelihoods of millions of households across the continent, more so in countries where subsistence farmers have been struggling to meet their bare minimum needs and sustain their livelihoods.

Potential control interventions

As a new pest to the continent, extensive studies are required, some of which are already underway to better understand the biology, behavior, host preference, habitat selection, migration pattern and range and other factors to help develop effective and adaptable control tools.

Awareness raising, training and empowering local communities, agricultural extension agents and other entities in proper identification, detection, routine and aggressive scouting, surveillance, monitoring as well as implementing safer and effective interventions remain critical to effectively abate this pest.

Cultural control, such as intercropping can provide crop cover and may be ideal for enhanced biological agents. For example, intercropping maize with beans has been reported reducing SFR infestation by 20-30 percent (CIMMYT, 2017). Such methods should be experimented and tried. Plant-based control interventions such as the push-pull system are being experimented and have shown promising results in abating crop damage from FAW (ICIPE is experimenting extensively to establish optimum means of utilization of the push-pull strategy). Minimum tillage and conservation agriculture can contribute to increased presence of natural control agents.

Preventive and curative mechanical control interventions, crushing and destroying caterpillars and eggs, exposing larvae and pupae to predators and harsh weather and other crop hygiene interventions can all contribute to reducing the pest population and minimize crop damage.

Pesticides are one of the tools in the tool box for SFR control. One must take into account the need for adapting application methods, timing and type of products to be employed to the nature of the pest – larval appearance and feeding at down/dusk, stalk and whorl penetration and cob/ear feeding, etc.

A good number of pesticides have been suggested for control interventions (some of these products may be pricy and/or not easily accessible). For example, USAID developed a Programmatic Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP) for Fall Armyworm Management in Africa that provides a detailed list of pesticides suitable for FAW control. The document also clearly describe the need for appropriate and safe use and handing of these materials to avoid human and non-target poisoning, environmental contamination, unnecessary crop residue and minimize waste and loss of assets associated with use and management of these products and many more.

(Note: Inexperienced observers can confuse SFR caterpillars with the indigenous African Armyworm or other caterpillars that often attack maize and other crops in much the same way. **End note)**

The search and research for biological control tools – parasitoids, parasites, predators, pathogens (e.g., birds, insects, and other animals could), including those that are being used in the pest's native land must be aggressively pursued for to develop an array of control tools in a tool box.

As part of a medium to long-term preventive and curative control interventions, proper identification and selection of host plant resistance are critical to implement in the context of sustainable integrated pest management strategies.

Actions being taken to abate SFR's threats to food security and livelihoods of millions of farmers across Africa

Host-countries across the continent continue assisting affected farmers and communities through awareness raising and control interventions. Technical, material and modest financial assistance from different stakeholders have contributed to strengthening affected countries' capacity to identify, assess and implement modest control interventions.

USAID has established an intra-agency working group on fall armyworm which brings together experts from USAID, USDA, US Land Grant US Universities, State Department, and several other external stakeholders. The Working Group meets and discusses the ongoing SFR situation, analyzes reports and information, charts the course for better and effective contributions to preventive and curative interventions from USAID and other GoS entities. It also tracks the FAW situation, actions taken or planned from within and outside the Agencies and

shares info and collaborates with different stakeholders across a wide spectrum.

USAID Office of U.S. Foreign Disaster Assistance (OFDA) is co-sponsoring a project being implemented by a consortium led by the UN/FAO and composed of the Desert Locust Control Organization for the Eastern Africa (DLCO-EA), Center for Agriculture and Biosciences International (CABI), International Center for Insect Physiology and Ecology (ICIPE) and National Crop Protection Departments and Host-Country Agricultural Research Organizations. The project is aimed at strengthening national and regional capacities and empowering farmers and local communities to better monitor, scout, forecast, prevent and control FAW outbreaks.

A USAID/OFDA funded and BFS managed project conducted a two day workshop in Entebbe, Uganda to develop a standardized, expert vetted field guide for FAW scouting, monitoring, early warning and management interventions. The workshop gathered more than 55 experts and researchers from across Africa, the Americas, and Europe and set a target date of early November to deliver the first version of FAW field guide. The International Center for Maize and Wheat Improvement (CIMMYT) has taken the lead for the development of the field guide.

The field guide will complement the OFDA-funded sub-regional project that is being implemented in Central and Eastern Africa and strengthen national and regional capacity in training, community-empowerment. The synergy between these two projects and other similar activities will contribute to effective SFR prevention and control. These two

projects will also augment other initiatives led by FAO and other stakeholders and streamline relevant continental actions and activities as well as recommendations from the Nairobi conference from April, 2017.

USAID/OFDA supported field assessments on impacts of FAW on maize crops in Southern Africa and FAW monitoring and surveillance in the region through its drought response program. USAID-funded Integrated Pest Management Innovation Lab, a two-day awareness and management workshop in Addis Ababa, Ethiopia in collaboration with ICIPE. Over 75 representatives from international organizations, governments, and missions participated in the workshop.

FAO HQ, regional and sub-regional offices in southern, eastern and western Africa conducted a number of training sessions on FAW for national crop protection officers and others in affected countries across Africa, developed protocols for farmers field school (FFS) and conducted training on FFS. FAO has developed and provided technical cooperation project to several countries that are affected by FAW and continues to do so. It has also convened technical expert workshops, donors' awareness/appraisal meeting and training workshop on Farmers Field School at its regional office in Accra, Ghana. FAO is leading the global coordination and hosts several working groups.

Several other stakeholders, including, but not limited to the National Research, Academic and management entities, MoAs, AGRA, CABI, CIMMYT, DLCO-EA, IRLCO-CSA, IITA, ASARECA, ICIPE, international development and

humanitarian donors, the private sector and non-governmental organizations are all contributing to the collective efforts to help address the SFR problem.

Useful websites on fall armyworm

Armyworm Network: A web resource for armyworm in Africa and their biological control:

<http://www.lancaster.ac.uk/armyworm/>

Latest African and Fall Armyworm Forecast from IRLCO-CSA - 5th Jul 2017:
http://www.lancaster.ac.uk/armyworm/forecasts/?article_id=002971

Invasive Species Compendium Datasheets, maps, images, abstracts and full text on invasive species of the world:
<http://www.cabi.org/isc/datasheet/29810>

Drought and armyworm threaten Africa's food security:
<http://www.theeastafrican.co.ke/news/Drought-and-armyworm-threaten-Africa-food-security/2558-3996692-ggws8q/index.html>

African Armyworm (AAW): There were no reports of AAW during September (DLCO-ER, IRLCO-CSA, OFDA/PSPM).

Forecast: AAW breeding season will commence with the onset of the rains in the southern outbreak region in October/November 2017, but will have come to an end in the central and eastern outbreak regions.

Trap operators for both AAW and FAW are advised to actively monitor their traps and send their trap moth catches to their national forecasting and or village forecasting officers. Trap monitoring

should be accompanied by routine crop scouting to detect egg and larval presence and to take necessary control actions.

Where applicable, CBAMFEW forecasters must always remain vigilant and report any trap catches on time to concerned authorities to facilitate rapid interventions (IRLCO-CSA, OFDA/AELGA).

Note: PSPM continuous developing and improving A/FAW information. So far, printable and web-based maps have been developed for AAW outbreak and invasion countries in the central and southern regions (click on the below link for the maps (OFDA/PSPM in collaboration with the GIU will develop a map for FAW similar to AAW):

<http://usaid.maps.arcgis.com/apps/Viewer/index.html?appid=9d2ab2f918284595819836d1f16a526f>

Quelea (QQU): QQU bird outbreaks were reported attacking irrigated sorghum in Tana River County of **Kenya** where aerial control operations were in progress at the time this report was compiled. In **Zimbabwe**, QQU outbreaks were reported attacking wheat in Manicaland and Masvingo Provinces and ground control was launched using an avicide. Large flocks of QQU birds were reported feeding on grass seeds in Kilimanjaro, Arusha, Morogoro and Dodoma regions in Tanzania (DLCO-EA, IRLCO-CSA).

Forecast: QQU birds are likely to be a problem to small grain cereal growers in **Kenya, Tanzania** and in **Zimbabwe** where irrigated small grain cereals are grown (IRLCO-CSA).

Facts: QQU birds can travel ~100 km/day in search of food. An adult QQU bird can consume 3-5 grams of grain and destroy the same amount each day. A medium density QQU colony can contain up to a million or more birds and is capable of consuming and destroying 6,000 to 10,000 kg of seeds/day, enough to feed 12,000-20,000 people/day (OFDA/AELGA).

Rodents: No update was received on rodents during September.

Note: On average an adult rat can consume 3-5 gm of food (grains etc.)/day and a population of 200 rats/ha (a very low density) could consume what a sheep can eat in one day (not to mention the amount they can damage, destroy or pollute making it unfit for human consumption) and the zoonotic diseases they carry and can transmit.

All ETOP front-line countries must maintain regular monitoring. Invasion countries should remain alert. DLCO-EA, IRLCO-CSA, DLCCs, DLMCC, CNLAs, national DPVs and PPDs, ELOs are encouraged to continue sharing ETOP information with stakeholders as often as possible and on a timely basis. Lead farmers and community forecasters must remain vigilant and report ETOP detections to relevant authorities immediately.

Inventories of Pesticide Stocks for SGR Prevention and Control

Only 34 ha were treated as preventive intervention against SGR in southern Algeria during September.

Note: A sustainable Pesticide Stewardship (SPS) can improve and

strengthen pesticide delivery system (PDS) at the national and regional levels. A strong and viable PDS can effectively reduce pesticide related human health risks, minimize environmental pollution, reduce pest control cost, improve food security and contribute to the national economy. A viable SPS can be effectively established by linking key stakeholders across political borders and geographic regions. End note.

OFDA/PSPM at all times encourages the use of alternatives to hard core pesticides and promotes IPM to minimize risks associated with pesticide stockpiling. A judiciously executed triangulation of surplus stocks from countries with large inventories to countries in need and where they can be effectively utilized is a win-win situation worth considering.

Table 1. ETOP Pesticide Inventory in Frontline Countries during March, 2016

Country	Quantity (l/kg)*
Algeria	1,188,708~
Chad	38,300
Egypt	68,070~ (18,300 ULV, 49,770 l)
Eritrea	17,124~ + 20,000 ^D
Ethiopia	9,681~
Libya	25,000~
Madagascar	206,000~ + 100,000 ^D
Mali	7,000
Mauritania	14,998 ^{DM}
Morocco	3,490,732 ^D
Niger	75,750~
Oman	10,000~
S. Arabia	89,357~
Senegal	156,000~
Sudan	169,710~
Tunisia	68,514 obsolete
Yemen	40,090 ^D + 180 kg GM~

* Includes different kinds of pesticide and

formulations - ULV, EC and dust;

~ data may not be current;

^D = Morocco donated 100,000 l of pesticides to Madagascar and 10,000 l to Mauritania in 2015

^D = In 2013 Morocco donated 200,000 l to Madagascar

^D = Saudi donated 10,000 to Yemen and pledged 20,000 l to Eritrea

^{DM} = Morocco donated 30,000 l of pesticides to Mauritania

GM = *GreenMuscle*TM (fungal-based biological pesticide)

LIST OF ACRONYMS

AAW	<i>African armyworm (Spodoptera expempta)</i>
AELGA	<i>Assistance for Emergency Locust Grasshopper Abatement</i>
AFCS	<i>Armyworm Forecasting and Control Services, Tanzania</i>
AfDB	<i>African Development Bank</i>
AGRA	<i>Agricultural Green Revolution in Africa</i>
AME	<i>Anacridium melanorhodon (Tree Locust)</i>
APLC	<i>Australian Plague Locust Commission</i>
APLC	<i>Australian Plague Locust Commission</i>
	<i>Bands groups of hoppers marching pretty much in the same direction</i>
ASARECA	<i>Association for Strengthening Agricultural Research in Eastern and Central Africa</i>
CABI	<i>Center for Agriculture and Biosciences International</i>
CAC	<i>Central Asia and the Caucasus</i>

<i>CBAMFEW</i>	<i>Community-based armyworm monitoring, forecasting and early warning</i>	<i>GM</i>	<i>GreenMuscle® (a fungal-based biopesticide)</i>
<i>CERF</i>	<i>Central Emergency Response Fund</i>	<i>ha</i>	<i>hectare (= 10,000 sq. meters, about 2.471 acres)</i>
<i>CIT</i>	<i>Calliptamus italicus (Italian Locust)</i>	<i>ICAPC</i>	<i>IGAD's Climate Prediction and Application Center</i>
<i>CLCPRO</i>	<i>Commission de Lutte Contre le Criquet Pélerin dans la Région Occidentale (Commission for the Desert Locust Control in the Western Region)</i>	<i>IGAD</i>	<i>Intergovernmental Authority on Development (Horn of Africa)</i>
<i>CNLA(A)</i>	<i>Centre National de Lutte Antiacridienne (National Locust Control Center)</i>	<i>IRIN</i>	<i>Integrated Regional Information Networks</i>
<i>COR</i>	<i>Central SGR Outbreak Region</i>	<i>IRLCO-CSA</i>	<i>International Red Locust Control Organization for Central and Southern Africa</i>
<i>CPD</i>	<i>Crop Protection Division</i>	<i>ITCZ</i>	<i>Inter-Tropical Convergence Zone</i>
<i>CRC</i>	<i>Commission for Controlling Desert Locust in the Central Region</i>	<i>ITF</i>	<i>Inter-Tropical Convergence Front = ITCZ)</i>
<i>CTE</i>	<i>Chortoicetes terminifera (Australian plague locust)</i>	<i>FAO-DLIS</i>	<i>Food and Agriculture Organizations' Desert Locust Information Service</i>
<i>DDLC</i>	<i>Department of Desert Locust Control</i>	<i>Hoppers</i>	<i>young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)</i>
<i>DLCO-EA</i>	<i>Desert Locust Control Organization for Eastern Africa</i>	<i>JTWC</i>	<i>Joint Typhoon Warning Center</i>
<i>DLMCC</i>	<i>Desert Locust Monitoring and Control Center, Yemen</i>	<i>Kg</i>	<i>Kilogram (~2.2 pound)</i>
<i>DMA</i>	<i>Dociostaurus maroccanus (Moroccan Locust)</i>	<i>L</i>	<i>Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)</i>
<i>DPPQS</i>	<i>Department of Plant Protection and Quarantine Services, India</i>	<i>LCC</i>	<i>Locust Control Center, Oman</i>
<i>DPV</i>	<i>Département Protection des Végétaux (Department of Plant Protection)</i>	<i>LMC</i>	<i>Locusta migratoriacapito (Malagasy locust)</i>
<i>ELO</i>	<i>EMPRES Liaison Officers –</i>	<i>LMM</i>	<i>Locusta migratoria migratorioides (African Migratory Locust)</i>
<i>EMPRES</i>	<i>Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases</i>	<i>LPA</i>	<i>Locustana pardalina</i>
<i>EOR</i>	<i>Eastern SGR Outbreak Region</i>	<i>MoAFSC</i>	<i>Ministry of Agriculture, Food Security and Cooperatives</i>
<i>ETOP</i>	<i>Emergency Transboundary Outbreak Pest</i>	<i>MoAI</i>	<i>Ministry of Agriculture and Irrigation</i>
<i>Fledgling</i>	<i>immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully developed reproductive organs to breed</i>	<i>MoARD</i>	<i>Ministry of Agriculture and Rural Development</i>
		<i>NALC</i>	<i>National Agency for Locust Control</i>
		<i>NCDLC</i>	<i>National Center for the Desert Locust Control, Libya</i>
		<i>NOAA (US)</i>	<i>National Oceanic and Aeronautic Administration</i>
		<i>NPS</i>	<i>National Park Services</i>
		<i>NSD</i>	<i>Republic of North Sudan</i>

NSE	<i>Nomadacris septemfasciata (Red Locust)</i>	ZEL	<i>Zonocerus elegans, the elegant grasshopper</i>
OFDA	<i>Office of U.S. Foreign Disaster Assistance</i>	ZVA	<i>Zonocerus variegatus, the variegated grasshopper, is emerging as a fairly new dry season pest, largely due to the destruction of its natural habitat through deforestation, land clearing, etc. for agricultural and other development efforts and due to climate anomalies</i>
PBB	<i>Pine Bark Beetle (Dendroctonus sp. – true weevils</i>		
PHD	<i>Plant Health Directorate</i>		
PHS	<i>Plant Health Services, MoA Tanzania</i>		
PPD	<i>Plant Protection Department</i>		
PPM	<i>Pest and Pesticide Management</i>		
PPSD	<i>Plant Protection Services Division/Department</i>		
PRRSN	<i>Pesticide Risk Reduction through Stewardship Network</i>		
QQU	<i>Quelea Qulelea (Red Billed Quelea bird)</i>		
SARCOF	<i>Southern Africa Region Climate Outlook Forum</i>		
SFR	<i>Spodoptera frugiperda (SFR) (Fall armyworm (FAW)</i>		
SPB	<i>Southern Pine Beetle (Dendroctonus frontalis) – true weevils</i>		
SGR	<i>Schistoseca gregaria (the Desert Locust)</i>		
SSD	<i>Republic of South Sudan</i>		
SWAC	<i>South West Asia DL Commission</i>		
PBB	<i>Pine Bark Beetle</i>		
PSPM	<i>Preparedness, Strategic Planning and Mitigation (formerly known as Technical Assistance Group - TAG)</i>		
Triangulation	<i>The process whereby pesticides are donated by a country, with large inventories, but often no immediate need, to a country with immediate need with the help of a third party in the negotiation and shipments, etc. Usually FAO plays the third party role in the case of locust and other emergency pests.</i>		
USAID	<i>the Unites States Agency for International Development</i>		
UN	<i>the United Nations</i>		
WOR	<i>Western SGR Outbreak Region</i>		

Who to contact for more information:

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