

**Emergency Transboundary Outbreak Pests (ETOPs) Situation for  
November with a forecast through mid-January 2019**  
**résumé en français est inclus**

## SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**<sup>1</sup>) situation remained generally calm during November and only small-scale breeding was reported in a few places in the western outbreak region (WOR) and the central outbreak region (COR); the situation remained calm in the eastern outbreak region (EOR) during this month.

**Forecast:** Limited-scale breeding will continue in winter breeding areas in WOR and COR and the situation will remain calm in EOR during the forecast period.

**Red (Nomadic) Locust** (*Nomadacris septemfasciata*) (**NSE**): NSE breeding was expected to have begun in the primary outbreak areas where rainfall occurred during November.

**Tree Locust, *Anacridium spp.*** outbreak persisted in Turkana and Wajir Counties in **Kenya** in November and Plant Protection Services were coordinating survey and control operations.

**Central American Locust, *Schistocerca piceifrons piceiferons* (CAL):** No update was received on CAL at the time this Bulletin was compiled.

**South American Locust, *Schistocerca cancellata* (SCA):** No update was received at the time this Bulletin was compiled.

**Italian (CIT), Moroccan (DMA), and the Asian Migratory Locusts (LMI):** the locust season is expected to have ended in CAC region during November and the situation will remain calm till next spring.

**Fall Armyworm (*Spodoptera frugiperda*) (FAW):** FAW continued appearing in rain-fed and irrigated crops in a few countries in Africa, India and elsewhere during November (for more info, refer to pages 8-11).

**African Armyworm (AAW) (*Spodoptera exempta*):** AAW outbreak was reported in Mangochi area in Machinga Agricultural Development Division in Malawi and control operations were carried out with assistance from the Government.

<sup>1</sup> Definitions of all acronyms can be found at the end of the report.

**Southern Armyworm (*Spodoptera eridania*) (SAW):** SAW, a ravenous pest native to the Americas from southern USA to Argentina may have not been reported on a scale in Africa yet. If established on the continent, it could become an extra a heavier burden to small-holder farmers who are struggling to fend off other invasive pests, such as the Fall Armyworm and indigenous species.

**Quelea birds (QQU):** QQU bird outbreaks were reported in several countries in **Kenya, Tanzania, Ethiopia** and **Sudan** in November and control operations were being implemented by the plant protection departments/services and DLCO-EA.

*Active surveillance, monitoring, reporting, information sharing and timely implemented preventive interventions remain critical at all times to abate the threats ETOPs pose to crops and pasture.*

*USAID/OFDA/PSPM monitors ETOPs regularly in close collaboration with its network of national PPDs/DPVs, regional and international pest monitoring and/or control entities, including FAO, CLCPRO, CRC, DLCO-EA, and IRLCO-CSA, as well as research centers, academia, private sector, NGOs and others and issues concise analytical reports and forecasts to stakeholders across the globe through its monthly Bulletins. **End summary***

## RÉSUMÉ

**La situation du Criquet pèlerin (*Schistoseca gregaria* - SGR)** est restée globalement calme en novembre et seule une reproduction à petite échelle a été signalée dans quelques sites de la région du foyer occidental (WOR) et des régions centrales du foyer (COR); la situation est restée calme dans la région est de l'épidémie est au cours de ce mois.

**Prévision:** Une reproduction à petite échelle se poursuivra dans les zones de reproduction hivernale du WOR et du COR, et la situation restera calme dans la zone de couverture au cours de la période de prévision.

**Criquet nomade rouge (*Nomadacris septemfasciata*) (NSE):** On s'attendait à ce que la reproduction de NSE ait commencé dans les principales zones d'infection où les précipitations sont arrivées en novembre.

**Criquet Amérique centrale, *Schistocerca piceifrons piceiferons* (CAL):** Aucune mise à jour n'a été reçue concernant la CAL au moment de la rédaction du présent Bulletin.

**Le criquet pèlerin, *Anacridium spp.*** l'épidémie a persisté dans les comtés de Turkana et de Wajir au Kenya en novembre et les services de la protection des végétaux coordonnaient les opérations de prospection et de lutte.

**Criquet d'Amérique du Sud, *Schistocerca cancellata* (SCA):** Aucune mise à jour n'a été reçue à la date de rédaction du présent Bulletin.

**Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI):** la saison des criquets devrait s'achever dans la région de la CAC en novembre et la situation demeurera calme jusqu'au printemps prochain.

**Chenille Légionnaire d'automne (*Spodoptera frugiperda*) (FAW):** FAW a continué d'apparaître dans les cultures pluviales et irriguées dans quelques pays d'Afrique, d'Inde et ailleurs en novembre (pour plus d'informations, reportez-vous aux pages 8 à 11).

**Chenille Légionnaire africaine (AAW) (*Spodoptera exempta*):** Un foyer d'AAW a été signalé dans la région de Mangochi, dans la division du développement agricole de Machinga au Malawi, et des opérations de lutte ont été menées avec l'aide du gouvernement.

**La chenille légionnaire du Sud (*Spodoptera eridania*) (SAW)** un ravageur vorace originaire des Amériques, du sud des États-Unis à l'Argentine, n'a peut-être pas été signalé à une échelle comparable en Afrique. S'il est établi sur le continent, il pourrait devenir un fardeau supplémentaire pour les petits exploitants agricoles qui luttent pour lutter contre d'autres parasites envahissants, tels que le légionnaire d'automne et les espèces indigènes.

**Quelea birds (QQU):** Des épidémies de QQU ont été signalées dans plusieurs pays du Kenya, en Tanzanie, en Éthiopie et au Soudan en novembre et des opérations de lutte ont été mises en œuvre par les départements / services de la protection des végétaux et DLCO-EA. en octobre.

La surveillance active, la surveillance, la notification, le partage d'informations et les interventions préventives en temps opportun restent critiques en tout temps pour réduire les menaces que posent les ETOP pour les cultures et les pâturages.

**L'USAID / OFDA / PSPM** surveille régulièrement les opérations ETOP en étroite collaboration avec son réseau de PPD / DPV nationaux, d'entités régionales et internationales de surveillance et / ou de lutte contre les ravageurs, notamment la FAO, la CLCPRO, le CRC, le DLCO-EA et l'IRLCO-CSA, ainsi que centres de recherche, universités, secteur privé, ONG et autres et publie des rapports analytiques concis et des prévisions aux parties prenantes du monde entier par le biais de ses bulletins mensuels. Fin du résumé

## OFDA's Contributions to ETOP Abatement Interventions

**USAID/OFDA** co-sponsored FAW disaster risk reduction project is being implemented by a group composed of the Center for Agriculture and Biosciences International (CABI), the Desert Locust

Control Organization for Eastern Africa (DLCO-EA), International Center of Insect Physiology and Ecology (ICIPE) and National MinAgri and other partners with FAOSFE managing the project. To date the project has completed national level Training of Trainers (ToT) that trained several dozen officers/staff in Burundi, Ethiopia, Kenya, Rwanda, Tanzania and Uganda. It has also launched consultative district level meetings for stakeholders involving more than 300 villagers and village chiefs and others in 50 districts in six countries. Monitoring using pheromone traps and scouting are being actively implemented in all project villages. Mobile apparatus are being utilized for monitoring, documenting and reporting the situation in all countries. The OFDA-BFS co-funded FAW Field Guide for Integrated FAW Management [https://feedthefuture.gov/sites/FallArmyworm\\_IPM\\_Guide\\_forAfrica.pdf](https://feedthefuture.gov/sites/FallArmyworm_IPM_Guide_forAfrica.pdf) and FAO's FAW IPM Manual for FFS were utilized for the training and scouting along with those of CABI, DLCO-EA, ICIPE and FAO.

The community/farmers' ToT field manual that CABI (Nairobi) has developed has been finalized and will soon be available for use. The Manual heavily references to the USAID FAW IPM field guide, FAO's FAW manual, and other relevant sources. It focuses on district officers, extension staff and rural communities. The manual is expected to be available for use soon

*OFDA/PSPM is working with interested parties to explore means and ways to*

*expand innovative technologies to AAW affected countries to contribute to food security and benefit farmers and rural communities.*

*OFDA/PSPM's interests in sustainable pesticide risk reduction in low income countries to strengthen their capacities and help avoid potentially threatening pesticide related contaminations and improve safety of vulnerable communities and their shared environment remain high on the agenda.*

*The online Pesticide Stock Management System (PSMS) that was developed by the UN/FAO with financial assistance from USAID/OFDA and other partners continues benefiting participating countries across the globe. Thanks to this tool, ETOP-prone countries and others have been able to avoid unnecessary procurements and stockpiling of pesticides. This practice has significantly contributed to host-countries' ability to effectively monitor, manage, minimize and avoid costly disposal operations and thereby improve safety and well-being of their citizens and their shared environment.*

*USAID/OFDA-sponsored DRR projects have been strengthened national and regional capacity for emergency locust control and prevention and helped tens of millions of farmers, pastoralists across Sahel West Africa, Northwest Africa, Eastern and Northeastern Africa, the Middle East and Caucasus and Central Asia (CAC). The projects created, facilitated and improved collaborations among neighboring countries for joint monitoring, surveillance, information sharing and technical support. The projects supported several dozen training on ETOP monitoring and control. Thanks to these and other similar efforts, potentially serious locust outbreaks and*

invasions had been abated several times in many countries across the primary outbreak regions for more than a decade

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

**Note:** ETOP SITREPs can be accessed on USAID Pest and Pesticide Management website: [USAID Pest and Pesticide Monitoring](#)

### Weather and Ecological Conditions

In **Morocco** the weather remained generally stable and cold with occasional stormy showers west of the Atlas Mountains, the southern coasts, the Center and the Rif. Annual vegetation cover is green in South and South-East Morocco following rainfall from the previous month. In **Mali**, ecological conditions remained favorable for the development and survival of SGR in some places in the country's grangerization areas during November.

Light to moderate rain fell along the Red Sea coasts and light showers were reported in the Al-Jawf and Hadhramout governorates in the interior of **Yemen** during the 2<sup>nd</sup> dekad of November. In **Djibouti** scattered greening of vegetation was observed in areas where rainfall was recorded last month, but overall dry conditions with low temperatures of 29 C during the day time and 24 C at night prevailed during November. Overcast and dry conditions prevailed in other SGR areas during this month.

**NSE Outbreak Regions:** Light to moderate rain was reported in most of the primary outbreak areas in the southern NSE outbreak areas. In Tanzania and Mozambique, significant rainfall was recorded near NSE outbreak regions. In southern Malawi good rain encouraged farmers to begin planting. Light rain and hot weather persisted in the Kafue Flats in the NSE outbreak area in southern Zambia. In most locations the seasonal rainfall was below average for November (IRLCO-CSA).

**CAC,** no update was received at the time this Bulletin was compiled, but warm and dry weather is expected to have gradually given way to cooler to colder and drier weather during November.

**Note:** *Changes in the weather pattern and increased 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 ambient altitude due to warmer higher elevations.*

*The Asian migratory locust, an insect that normally breeds once a year, has begun exhibiting two generations per year. These anomalies which are largely attributed to the change in the weather patterns and associated ecological shift are serious concerns to farmers, rangeland managers, crop protection experts, development and humanitarian partners, etc. Regular monitoring, documenting and reporting anomalous manifestations in pest behavior and on habitat shifts remain critical to help avoid/minimize potential damage to crops, pasture and livestock and reduce subsequent negative impacts on food*

*security and livelihoods of vulnerable populations and communities.*

[http://www.cpc.ncep.noaa.gov/products/international/casia/casia\\_hazard.pdf](http://www.cpc.ncep.noaa.gov/products/international/casia/casia_hazard.pdf)

**End note.**

### Detailed Accounts of ETOP Situation and a Forecast for the Next Six Weeks are provided below

**SGR – WOR:** Limited-scale breeding occurred in WOR during November. In **Mauritania**, in the center of the country in Trarza and Brakna scattered populations of mature and immature adults with densities reaching 300 ind / ha mixed with different instar hoppers were found in wadis and Graras. At Grara Manssour and Dweyrara adult populations were mixed with hoppers with densities varying between 2 and 3 individuals / m<sup>2</sup> respectively.

In **Mali**, the Gao Response Base confirmed the presence of SGR in the western part of the Adrar des Iforas and Timetrine; a small-scale breeding occurred in the northern part of the country during November. However, the situation was overall considered calm. Small-scale breeding was also reported in northern **Niger** and low numbers of adult locusts were detected in eastern **Chad** during this month.

In **Algeria**, four ground survey and control teams were deployed at Tamanrasset and Adrar and reported that continued rainfall in the Saharan regions in the country created favorable ecological conditions for locusts to breed in the Hoggar agricultural perimeters and in the extreme south. Different instar hoppers and solitary adults were detected in Tamanrasset and 129 ha were treated at In Guezzam during November. The situation remained calm in **Morocco** and **Tunisia** and no locusts were reported in

Libya during November (CNLA/Mauritania, CNLAP/Mali, CNLAA/Morocco, CNLA/Tunisia, FAO-DLIS, INPV/Algeria).

**Forecast:** In **WOR** small-scale breeding will likely continue in Mauritania, but other countries in the region will likely experience calmness during the forecast period (INPV/Algeria, CNLCP/Mali, CNLA/Mauritania, CNLAA/Morocco, CNLA/Tunisia, FAO/DLIS, PSPM/PMI).

SGR (Desert Locust) – increased number of locusts were reported on the Red Sea coasts in **Sudan**, **Eritrea** and **Saudi Arabia** and small-scale breeding occurred in **Sudan** and southern **Oman** during November. No locusts were reported in Djibouti and other countries in the COR and no surveys were conducted in **Yemen** during November due to the ongoing insecurity situation and lack of resources and no locusts were reported in other countries in COR (DLMCC/Yemen).

**Forecast:** Small-scale breeding will likely occur on both sides of the Red Sea region and increase locust numbers. Small-scale breeding is also likely on the southern coast of Yemen and Oman and northern Somalia provided more rainfalls. The situation will remain calm in other countries in COR during the forecast period (FAO-DLIS, LCC/Oman, PPD/Sudan).

**SGR - EOR:** the SGR situation remained calm in South-West Asia and no locusts were reporting during November (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 Horn of Africa emergency desert locust management project contributed to strengthening national and regional capacity for SGR surveillance, monitoring and control. Technical and material supports that have been provided through the project enabled front-line countries and DLCO-EA to better monitor, report, and build capacity to prevent, and abate locusts in the sub-region.

**Red (Nomadic) Locust (NSE):** NSE breeding is expected to have commenced in the primary outbreak areas in Malagarasi Basin, Wembere and North Rukwa areas in Tanzania, in Buzi-Gorongosa and Dimba plains in Mozambique and in Lake Chilwa/L. Chiuta plains in southern Malawi where light to moderate rains were expected to have occurred (IRLCO-CSA).

**Forecast:** The presence of significant parental populations and the occurrence of light to moderate rainfall will create favorable conditions for NSE to breed in the primary outbreak areas in **Malawi, Mozambique** and **Tanzania** and increase substantially and cause hopper bands to develop during early 2019.

Aggressive surveillance and timely control interventions must be planned in advance and implemented on time to curtail the threats the pest poses to small-holder farmers (IRLCO-CSA, OFDA/AELGA).

**Central American Locust - *Schistocerca piceifrons piceifrons* (CAL):** No update was received at the time this Bulletin was compiled, but the locust situation is expected to have remained active in *the* Yucatán Peninsula in **Mexico** and other parts of the region during November.



Adult CAL/SPI in Yucatan, Mexico (photo courtesy: CESVY, 2018)

**Forecast:** Locust activities will gradually diminish in the primary outbreak areas in the Yucatan Peninsula in **Mexico** and **Nicaragua** during the forecast period.

**Note:** CAL (SPI), native to Central and South America, belongs to the same genus as the Desert Locust, *Schistocerca*. It is an important pest in the tropical regions of the America, particularly in Belize, México, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panamá. The pest has two generations per year. In the Yucatán Peninsula outbreak often occurs every 4 years, probably this year it may appear in higher density due to favorable ecological conditions. National entities routinely monitor the pest and the Federal and State Governments coordinate with farmers to prevent population build ups. In addition, training and other supports are provided through OIRSA – the Regional office of the International Organization for Animal and Plant Health (Mario Poot).

**South American Locust, *Schistocerca cancellata* (SAL):** No update was received during November, but as the warmer and wetter season commenced, locusts may have begun appearing in the primary breeding areas in Argentina, Bolivia or Paraguay during the month.

**Forecast:** *The SCA will likely continue appearing and increasing as the weather continue to improve and regeneration of vegetation during spring into summer seasons and allow populations to further develop in some places. Timely cross-border surveillance and monitoring remain essential to detect and abate the pest (Senasa/Argentina).*

***Tropidacris collaris* (Tucura quebrachera – TCO - grasshopper-):** No update was received during November and no significant activities are expected to have occurred during this time.

**Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC):** No update was received on CAC locusts, but the situation is expected to have remained calm during November across the CAC region

**Forecast:** The locust situation in CAC will remain calm till next spring.

**Tree locust: *Anacridium spp.*** outbreaks persisted in Turkana and Wajir Counties in **Kenya** in November. Preparations by Plant Protection Services were in progress to carry out survey and control. The pest is known to feed on *Acacia spp.*, the main source of food for grazing animals, including livestock (IRLCO-CSA).

***Fall armyworm (FAW) (S. frugiperda)***

FAW continued its presence in some countries in Africa where it has reported causing damage to rain-fed and irrigated crops. In eastern Africa, infestations that were detected in rain-fed/irrigated fields in **Rwanda** and **Kenya** during a field visit by the USAID/OFDA technical advisor in October are expected to have continued in some locations where crops were at early stages during the field visit, but

must have diminished in areas where crops were harvested. The pest has been reported in parts of Ethiopia, Uganda, South Sudan, Yemen, India and Sri Lanka and may have arrived in other neighboring countries, but details were not available at the time this Bulletin was compiled. No FAW was reported in the southern Africa region and no reports were received from the Sahel, Tropical western Africa and elsewhere during this month.

FAO and its partners developed an interactive FAW Risk-Index heat map to help monitor the potential level of risk of FAW situation in affected countries across Africa, Yemen, etc. As of now, the pest has been reported in all of sub-Saharan African, including Seychelles. Only Eritrea and Lesotho have not yet reported.

<http://www.fao.org/emergencies/resources/maps/detail/en/c/1110178/>



FAW larva feeding on fresh corn ear in Moshi district in Kilimanjaro Region of Tanzania (photo courtesy: Juma and Didas, 13 June, 2018)

**Forecast:** FAW will continue being a problem in irrigated and rain-fed maize and other crops across several regions in Africa and Asia as the cropping seasons kick in.

*USAID/OFDA-funded community empowerment project on fall armyworm monitoring, early warning and management continued its activities in*

participating six eastern African and the Horn countries. USAID/OFDA senior technical advisor for pests and pesticides and project manager participated in the project mid-term review held in Kigali Rwanda during the last week of November 2018.



CFAMFEWM project mid-term review participants, Kigali, Rwanda, November 28-30, 2018 (Courtesy: FAOSFE).

The mid-term review discussed accomplishments, constraints encountered, and remedial actions taken. It also outlined follow on activities.

All participating countries except Burundi, implementing and managing partners were present at the review. The review lasted three days and looked at several information dissemination materials, including a training of trainers manual and posters, etc.



FAW larva feeding on fresh corn ear (kernels are at R2 growth stage) in Hanang district in Manyara Region of Tanzania (photo courtesy: Juma and Didas, 20 June, 2018)

Reinforcing acquiring of knowledge and skills among farming communities and

ensuring retention of the KS in FAW biology, behavior, monitoring, scouting, and management, as well as education and sensitization on human and animal health risks associated with consumption of fungal-infected grains were recounted and discussed at length.



A fall armyworm (FAW) larva (caterpillar) comfortably resting between rows of corn kernels (Photo courtesy: Didas Moshi, DLCO-EA-Tanzania 28 June, 2018).

Actions taken in strengthening and bolstering community KS on natural enemies, including fungal pathogens, predators and parasitoids and other natural means for FAW management and control were discussed at length. Issues of handpicking and the use of plant-based extracts, e.g., Babachico (*Chromolaena odorata* – common name Siam weed, devil weed, trifid – containing larvicidal chemical that can affect major mosquito vectors as well as fungicidal, nematicidal and other useful properties<sup>L</sup> [https://en.wikipedia.org/wiki/Chromolaena\\_odorata](https://en.wikipedia.org/wiki/Chromolaena_odorata)) were discussed alongside with proven, integrated methodologies and tools for the prevention and control of the pest.

An FAW Research for Development Conference was convened in Addis Ababa, Ethiopia in late October 2018. The meeting was aimed at ensuring a **science-based platform** for sustained collaboration, adaptation and learning for effective FAW management under an Integrated Pest Management framework.

The aim of the meeting was for global and African strategic partners to espouse a common protocol for proven FAW management options.

*Note: Several species of natural enemies, including parasites, parasitoids, predators and entomopathogens have been discovered in Ethiopia, Kenya, Tanzania Madagascar, and India during the past several months. Further investigations and experiments are being conducted on the natural enemies both in Africa and Asia to better understand their safety, efficacy and adaptability alongside other agro-ecological means, including push-pull technology, etc. End note.*

<http://www.informaticsjournals.com/index.php/jbc/article/viewFile/21707/17850>:

<https://www.thehindu.com/news/national/karnataka/rav-aged-by-a-caterpillar/article25010469.ece>

[http://www.nbair.res.in/recent\\_events/Pest%20Alert%2030th%20July%202018-new1.pdf](http://www.nbair.res.in/recent_events/Pest%20Alert%2030th%20July%202018-new1.pdf),

[http://www.exeter.ac.uk/news/featurednews/title\\_676373\\_en.html](http://www.exeter.ac.uk/news/featurednews/title_676373_en.html),

<http://www.fao.org/news/story/en/item/1148819/code/>,

<https://www.cimmyt.org/fall-armyworm-reported-in-india-battle-against-the-pest-extends-now-to-asia/>

USAID/BFS and OFDA co-funded IPM based FAW management guidance document is now available in English and French: [Fall Armyworm in Africa: A Guide for Integrated Pest Management](#) and will be available in Portuguese language.

USAID/BFS has developed an easy-to-use one-page pest management decision guide (PMDG) in collaboration with CABI for dozens of countries across Africa and continues working on affordable tools. The PMDG is being translated into local languages to benefit rural communities.

BFS and SAWBO (Scientific Animation Without Borders) jointly developed a short, animation video clip on FAW biology, detection, scouting, monitoring, control and awareness raising for small-holder farmers <https://sawbo-animations.org/video.php?video=//www.youtube.com/embed/5rxlpXEK5g8>

<https://ecd.usaid.gov/repository/pdf/50065.pdf>

*Active surveillance and timely reporting and preventive interventions remain crucial to address FAW problems*

*Safer and affordable, ecologically sustainable, economically sound, socially acceptable IPM based proven pest management intervention methodologies and assessment tools need to be available and widely disseminated to manage the threat/damage pests pose to the farming communities, more so small-holder farmers.*

#### **Additional info sources on FAW**

Armyworm Network: A web resource for armyworm in Africa and their biological control: <http://www.armyworm.org/>

<https://www.plantwise.org/pesticide-restrictions>

*Bt maize and the fall armyworm in Africa (Africa Center for Biodiversity, June 2018):*

<https://acbio.org.za/sites/default/files/documents/BT%20Maize%20Fall%20Army%20Worm%20report.pdf>

*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-gqws8q/index.html>

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

[http://www.fao.org/fileadmin/templates/fcc/map/map\\_of\\_affected\\_areas/Fall\\_Armyworm\\_brief\\_-\\_15Dec2017\\_.pdf](http://www.fao.org/fileadmin/templates/fcc/map/map_of_affected_areas/Fall_Armyworm_brief_-_15Dec2017_.pdf)

FAO FAWRisk-Map has been developed to provide information on the risk of household food insecurity due to FAW across Africa (see below)

<http://www.fao.org/emergencies/resources/maps/detail/en/c/1110178/>

NURU, a mobile phone application that detected FAW eggs, larvae, pupae and damage on maize crops. The app is developed by Penn State University in collaboration with UNFAO:

<http://www.fao.org/news/story/en/item/1141889/icode/>

<https://play.google.com/store/apps/details?id=org.fao.faw>

<https://entomologytoday.org/2018/11/20/not-just-maize-africas-fall-armyworm-crisis-threatens-sorghum-other-crops/>

**African Armyworm (AAW):** AAW outbreak was reported in Mangochi area in Machinga Agricultural Development Division in Malawi and control was carried out with MoA material and technical assistance to affected farmers (IRLCO-CSA).

**Forecast:** AAW outbreaks will likely continue at the foot hills of the seasonal rainfall that favors the pest outbreak. *Frontline countries are advised to maintain aggressive trap monitoring, crop scouting and timely reporting the presence of the pest and alert fellow farming communities in and outside their districts and neighboring areas. Forecasters are advised to maintain fully operational pheromone traps at all times*

*during cropping seasons at the start of the seasonal rains that triggers the appearance of the pest. Vigilance and timely appropriate preventive interventions remain critical to avoid major crop damage (OFDA/AELGA).*

**Note:** USAID/OFDA has developed printable and web-based maps for AAW trap monitoring locations, for participating outbreak and invasion countries in the central region:  
<http://usaid.maps.arcgis.com/apps/Viewer/index.html?appid=8ff7a2eefbee4783bfb36c3e784e29cb>.

A similar map is also being developed for the southern region:  
<http://usaid.maps.arcgis.com/apps/Viewer/index.html?appid=9d2ab2f918284595819836d1f16a526f>  
(click the links for the maps). OFDA/PSPM intends to develop a similar map for FAW DDR project).

**Southern Armyworm (*Spodoptera eridania*) (SAW/SER).** SAW- a pest native to the Americas widely present from the southern parts of the US down to Argentina is probably the most polyphagous (can feed on multiple host plants) of all armyworm species that belong to the Genus *Spodoptera*. This pest is known to feed on more than 200 species of plants in 58 families, mostly broadleaf, including, but not limited to cabbage, carrot, cassava, collard, cotton, cowpea, eggplant, okra, pepper, potato, soybean, sweet potato, tomato, avocado, citrus, peanuts, sunflower, tobacco and varies flowers and watermelon  
[http://entnemdept.ufl.edu/creatures/veg/leaf/southern\\_armyworm.htm](http://entnemdept.ufl.edu/creatures/veg/leaf/southern_armyworm.htm). (comparison: FAW has a host range of 80-100 plant species

*SAW can produce multiple generations per year and completes its life cycle in 30-40 days. It is prolific and the female can lay 1,500-3,000 eggs under favorable temperature and host plant over her lifetime.*



A mature SAW larva (caterpillar) (file photo UF)

So far, SAW has not been detected in Africa on an outbreak-scale. However, its presence is not discounted. With more than 200 plant species on its menu, the presence of SAW on the African continent is certainly an additional and a serious threat to small-holder farmers who are already struggling to fend off other pests of major economic importance.

Control operations for SAW include natural enemies - parasitoids, predators, and pathogens; synthetic and biological pesticides, as well as botanical agents and other technologies. Given that the larvae of this pest are mostly external feeders, although they bore into fruits such as tomatoes, direct application of safer, effective and affordable pesticide use can be more effective on this pest than others that feed from inside plant parts.

**Quelea (QQU):** QQU bird outbreaks were reported in Kisumu, Tana River and Kirinyaga counties in Kenya. The birds were reported attacking irrigated rice (Kirinyaga, Kisumu counties) and sorghum in Tana River County. Aerial control operations were also carried out against QQU in Efratana Gidim, Kewet, Jile, Dawa Chefa and Kalu districts in **Ethiopia**, in Kilimanjaro and Moshi regions in **Tanzania** as well as in Ghedaref, **Sudan** during November. DLCO-EA spray aircraft were employed

for control operations in all countries (DLCO-EA, IRLCO-CSA).

**Forecast:** QQU outbreaks will likely continue being a problem to maturing small grains in Kenya and northern Tanzania where newly emerging populations could cause damage during the forecast period (IRLCO-CSA, OFDA/AELGA).

**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 November, but the pest is a constant threat to field and storage crops.

**FACTS:** On average, an adult rat can consume 3-5 gm of food (grain, etc.) per day; a population of 200 rats/ha (an extremely low density/unit area) can consume a quantity enough to feed an adult sheep/day, not to mention the amount of food the rats can damage, destroy, contaminate making it unfit for human consumption, not to mention the zoonotic disease this pest carries and can transmit.

**All ETOP front-line countries must maintain regular monitoring and surveillance. During crop in-seasons, scouting must be implemented on a regular basis. Invasion countries should remain on 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.

**Note:** A sustainable Pesticide Stewardship (SPS) can contribute to strengthening a 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** encourages the use of alternatives to hard core pesticides and at all times promotes IPM to minimize risks associated with pesticide stockpiling. A judiciously executed triangulation of surplus stocks from countries with large inventories and disproportionate need to countries in need and that can effectively and safely utilize can create a win-win situation worth considering.

### Inventories of Pesticide Stocks for SGR Prevention and Control

Inventory of national strategic stocks of SGR pesticides slightly changed during November with 129 ha treated in Algeria.

Table 1. Inventory of Strategic SGR Pesticide Stocks in Frontline Countries

Country	Quantity (l/kg)*
Algeria	1,186,842~
Chad	34,100
Egypt	68,070~ (18,300 ULV, 49,770 l)
Eritrea	17,122~ + 20,000 <sup>D</sup>
Ethiopia	9,681~

Libya	25,000~
Madagascar	206,000~ + 100,000 <sup>D</sup>
Mali	3,600
Mauritania	40,000
Morocco	3,490,732 <sup>D</sup>
Niger	75,750~
Oman	10,000~
S. Arabia	89,357~
Senegal	156,000~
Sudan	169,710~
Tunisia	62,200 obsolete
Yemen	40,090 <sup>D</sup> + 180 kg GM~
* Includes different kinds of pesticide and formulations - ULV, EC and dust;	
~ data may not be current;	
<sup>D</sup> = Morocco donated 100,000 l of pesticides to Madagascar and 10,000 l to Mauritania in 2015	
<sup>D</sup> = In 2013 Morocco donated 200,000 l to Madagascar	
<sup>D</sup> = Saudi donated 10,000 to Yemen and pledged 20,000 l to Eritrea	
<sup>DM</sup> = Morocco donated 30,000 l of pesticides to Mauritania	
GM = <i>GreenMuscle</i> <sup>TM</sup> (fungal-based biological pesticide)	

### LIST OF ACRONYMS

AAW	African armyworm ( <i>Spodoptera expempta</i> )
AELGA	Assistance for Emergency Locust Grasshopper Abatement
AFCS	Armyworm Forecasting and Control Services, Tanzania
AfDB	African Development Bank
AGRA	Agricultural Green Revolution in Africa
AME	<i>Anacridium melanorhodon</i> (Tree Locust)

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

MoARD Ministry of Agriculture and Rural Development  
 NALC National Agency for Locust Control  
 NCDLC National Center for the Desert Locust Control, Libya  
 NOAA (US) National Oceanic and Aeronautic Administration  
 NPS National Park Services  
 NSD Republic of North Sudan  
 NSE *Nomadacris septemfasciata* (Red Locust)  
 OFDA Office of U.S. Foreign Disaster Assistance  
 PBB Pine Bark Beetle (*Dendroctonus* sp. – true weevils)  
 PHD Plant Health Directorate  
 PHS Plant Health Services, MoA Tanzania  
 PPD Plant Protection Department  
 PPM Pest and Pesticide Management  
 PPSD Plant Protection Services Division/Department  
 PRRSN Pesticide Risk Reduction through Stewardship Network  
 QQU *Quelea Qulelea* (Red Billed *Quelea* bird)  
 SARCOF Southern Africa Region Climate Outlook Forum  
 SCA *Schistocerca cancellata* (South American Locust)  
 SFR *Spodoptera frugiperda* (SFR) (Fall armyworm (FAW))  
 SGR *Schistoseca gregaria* (the Desert Locust)  
 SPI *Schistocerca piceifrons piceiferons* (Central American Locust)  
 SSD Republic of South Sudan  
 SPB Southern Pine Beetle (*Dendroctonus frontalis*) – true weevils  
 SWAC South West Asia DL Commission  
 PBB Pine Bark Beetle  
 PSPM Preparedness, Strategic Planning and Mitigation (formerly known as Technical Assistance Group - TAG)  
 Triangulation 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.

UF University of Florida  
 USAID the United States Agency for International Development  
 UN the United Nations  
 WOR Western SGR Outbreak Region  
 ZEL *Zonocerus elegans*, the elegant grasshopper  
 ZVA *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

#### **Point of Contact:**

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