

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

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹) situation remained generally calm in the western outbreak region (WOR) during December and only small-scale breeding was reported in Mali, Niger and Algeria. An outbreak was reported the central outbreak region (COR) in Sudan and Eritrea during December. 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 2nd generation breeding will occur in COR and the situation will remain calm in EOR during the forecast period.

Red (Nomadic) Locust (*Nomadacris septemfasciata*) (**NSE**): Mating and egg laying occurred in primary outbreak areas where ecological conditions gradually continued improving, but overall the situation remained fairly calm during December.

Tree Locust, *Anacridium spp.* No tree locust outbreaks were reported during this month.

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 situation in the CAC region is expected to have remained calm during December.

Fall Armyworm (*Spodoptera frugiperda*) (FAW): Moderate FAW outbreaks were reported in maize fields in the Copperbelt province in Zambia during December (for more info, refer to pages 8-10).

African Armyworm (AAW) (*Spodoptera exempta*): Moderate AAW outbreaks were reported in maize fields in Malawi during December.

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

Southern Armyworm (*Spodoptera eridania*) (SAW): Though not yet reported on [a scale] in Africa, SAW, a pest native to the Americas from southern USA to Argentina, could be a serious threat to small-holder farmers across the continent. If arrived and established it pest could become an extra heavy burden to small-holder farmers for whom struggling to fend off other newly arrived invasive pests, such as FAW and indigenous species remains to be an uphill battle.

Quelea birds (QQU): QQU bird outbreaks were reported in Tanzania and Kenya. The birds were reported attacking rice and sorghum. Aerial control operations were carried out by the MinAgries with assistance by the DLCO-EA.

Active surveillance, monitoring, reporting, sharing information and timely implementation of preventive interventions remain critical to abate the threats ETOPs pose to food security and livelihoods of vulnerable communities.

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 dans la région de flambée occidentale (WOR) en décembre et seule une reproduction à petite échelle a été signalée au Mali, au Niger et en Algérie. Un foyer a été signalé dans la région du foyer central au Soudan et en Érythrée en décembre. 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 hivernales dans le WOR et une reproduction de 2eme génération aura lieu dans la COR et la situation restera calme dans la RAH pendant la période de prévision.

Criquet nomade rouge (*Nomadacris septemfasciata*) (NSE): L'accouplement et la ponte ont eu lieu dans les zones de flambée épidémique où les conditions écologiques se sont progressivement améliorées, mais la situation est restée relativement calme en décembre.

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

Le criquet pèlerin, *Anacridium spp.* Aucune mise à jour n'a été reçue à la date de rédaction du présent Bulletin.

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 situation acridienne dans la région de la CAC devrait être restée calme en décembre.

Chenille Légionnaire d'automne (*Spodoptera frugiperda*) (FAW): des flambées modérées de FAW ont été signalées dans des champs de maïs dans la province de Copperbelt en Zambie et dans des champs de maïs et de sorgho en Éthiopie en décembre (pour plus d'informations, voir pages 8-10).

Chenille Légionnaire africaine (AAW) (*Spodoptera exempta*): Des flambées modérées d'AAW ont été signalées dans des champs de maïs au Malawi en décembre.

La chenille légionnaire du Sud (*Spodoptera eridania*) (SAW): Bien que pas encore signalé sur [une échelle] en Afrique, SAW, un ravageur originaire des Amériques, du sud des États-Unis à l'Argentine, pourrait constituer une menace sérieuse pour les petits agriculteurs du continent. Si elle arrivait et s'établissait, elle pourrait devenir un fardeau supplémentaire pour les petits exploitants agricoles pour qui lutter contre d'autres ravageurs envahissants nouvellement arrivés, tels que FAW et des espèces indigènes, reste une bataille ardue.

Quelea birds (QQU): Des foyers d'oiseaux QQU ont été signalés en Tanzanie et au Kenya. Les oiseaux auraient attaqué le riz et le sorgho. Les opérations de lutte aérienne ont été effectuées par les ministres des affaires avec l'assistance du DLCO-EA.

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 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 **WOR**, scattered areas of green vegetation persisted in Akjoujt to Oujelt in northwest Mauritania, in Tilemsi Valley in Tazerzait Plateau, northern Tamesna, and a few places in the Air Mountains in Mali as well as in adjacent areas in the extreme south of Algeria. Ecological conditions were favorable in the Adrar Valley of central Algeria and on the southern side of the Hoggar Mountains near Tamanrasset for SGR to breed. In Morocco, patches of green vegetation persisted in a few places in the Draa and ZizGhris valleys.

In **COR**, light to moderate rains were recorded on the Red Sea coast between Port Sudan and Foro in Sudan, in Eritrea, on the central Red Sea coast near Jeddah in Saudi Arabia and the eastern coast of Oman during this month. Conditions were also favorable along the southern coastal areas in Egypt and on Tihama in Yemen and the edge of the Empty Quarter in the southern province of Dhofar, Oman and the southeastern Empty Quarter near the borders of Yemen, Oman and Saudi Arabia.

Dry conditions prevailed throughout the region in the **EOR** during December.

NSE Outbreak Regions: Light to moderate rain that was reported in most of the primary NSE outbreak areas in the southern region in November continued well into December. Rain was recorded in all of the NSE primary outbreak areas in Malawi, Mozambique, Tanzania and Zambia. In Tanzania heavy rain ranging from 199 mm in Wembere to 316.6 mm in Malagarasi Basin was recorded. In Mozambique, 161.1 mm in Buzi-Gorongosa Plain to 133 mm in Dimba Plain and 165 mm in Zambia was recorded (IRLCO-CSA).

CAC, no update was received at the time this Bulletin was compiled, but cold and dry weather is expected to have prevailed December.

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

End note.

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

SGR – WOR: Small-scale breeding occurred in northwest **Mauritania**, northern **Mali** and **Niger**, and southern Algeria. A few groups of hoppers and adults formed in northern **Niger** and ground teams treated 394 ha. Isolated adults were present in Morocco during December. No locusts were reported in other countries in the WOR (FAO-DLIS).

Forecast: In WOR, low numbers of adults will likely persist in northwest **Mauritania**, northern **Mali** and **Niger**, and southern **Algeria** in areas where ecological conditions remain favorable. Small-scale breeding could commence south of the Atlas Mountains in **Morocco** and in northern **Mauritania** at the end of the forecast period once temperatures warm up (CNLA/Mauritania, CNLAP/Mali, CNLAA/Morocco, CNLA/Tunisia, FAO-DLIS, INPV/Algeria).

SGR – COR: In COR, an outbreak occurred on the Red Sea coast of **Sudan** and **Eritrea** where control operations treated nearly 8,500 ha of hopper and adult groups and a few hopper bands and swarms. Small-scale breeding occurred in southeast **Egypt**, the Red Sea coast of **Saudi Arabia**, and southern Oman during this month (DLCO-EA, FAO-DLIS, LCC/Oman, PPD/Sudan).

Forecast: Breeding will likely continue and increase locust numbers and oerhaps

swarms on the Red Sea coast in Sudan and Eritrea and small-scale breeding may also result in increased number of locusts in Egypt, Saudi Arabia and Yemen. A few SGR groups and swarms may form along the Yemen/Oman/Saudi Arabia border where good rains fell during Cyclone Luban (FAO-DLIS, LCC/Oman, PPD/Sudan).

SGR - EOR: The SGR situation remained calm in EOR during December and no locusts were reported and 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 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 situation remained relatively calm in the central and southern outbreak regions during December. However, successful breeding is expected to have taken place in the Ikuu-Katavi plains, Wembere plains, North Rukwa plains and Malagarasi Basin in Tanzania; the Dimba and Buzi plains in Mozambique and in the Kafue Flats in Zambia where significant adult populations were present at the onset of the rains (IRLCO-CSA).

Forecast: Hatching is expected to commence in January Red Locust eggs will hatch in January and form hopper bands in the outbreak areas. Low to medium size hopper bands are likely to form in outbreak areas where significant residual parental populations persisted before the onset of the rains, e.g., Ikuu-Katavi, North Rukwa plains, Wembere plains and Malagarasi Basin in Tanzania; Buzi and Dimba plains in Mozambique; Lake Chilwa/Lake Chiuta plains in Malawi and the Kafue Flats in Zambia. Timely and regular surveillance and preventive interventions remain critical to curtail any threats the pest poses to small-holder farmers. IRLCO-CSA intends to carry out surveillance (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 gradually diminished in the Yucatán Peninsula in **Mexico** and other parts of the region during December.



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

Forecast: Locust activities are expected to remain calm 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 December, but as the warmer and wetter season commenced, locusts are expected to 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 continues to improve and vegetation regenerates to sustain population during summer seasons which will allow locust populations to further develop in some places. Timely cross-border surveillance and monitoring remain essential to detect and abate the pest.

***Tropidacris collaris* (Tucura quebrachera – TCO - grasshopper-):**

No update was received during at the time this Bulletin was compiled and no significant activities are expected to have occurred.

Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC): No update was received in CAC and the situation is expected to have remained calm during December

Forecast: The CAC region will remain calm till next spring.

Tree locust: *Anacridium spp.* No report was received tree locusts during December.

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

FAW was reported in the Copperbelt Province in Zambia during December. It was indicated that the pest may also be present in irrigated maize and other crops in Zimbabwe, Malawi and neighboring countries. In eastern Africa, infestations that were detected earlier in rain-fed/irrigated fields in **Rwanda, Kenya** etc., are expected to have continued in some locations where crops were not yet harvested. FAW infestations were reported on some 2,700 ha in Oromya and Gambella Administrative Regions Ethiopia during December. The pest was detected on maize and sorghum crops and mechanical and chemical control operations were effected on some 1,300 ha.

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

Activity updates:

USAID/OFDA-funded community empowerment project on FAW monitoring, early warning and management continued in the participating six eastern and the Horn of

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

The mid-term review discussed accomplishments, identified constraints encountered, and remedial actions taken and outlined follow on activities. The review lasted three days and looked at several issues including but not limited to information dissemination materials, training of trainers manual and posters, etc.



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

*Reinforcing and ensuring retention of knowledge and skills (KS) in FAW biology, behavior, monitoring, scouting, and management, as well as sensitization on human and animal health risks associated with consumption of fungal-infected grains were emphasized and discussed at length. Actions taken in strengthening and bolstering community KS on natural enemies, including fungal pathogens, predators and parasitoids and other natural means for FAW management were discussed at length. 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, nematocidal and other useful properties^L*

https://en.wikipedia.org/wiki/Chromolaena_odorata) were discussed alongside with proven, integrated methodologies and tools for the prevention and control of the pest.



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



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, June, 2018)



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

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

[http://www.informaticsjournals.com/index.php/jbc/article/viewFile/21707/17850;](http://www.informaticsjournals.com/index.php/jbc/article/viewFile/21707/17850)

<https://www.thehindu.com/news/national/karnataka/ravaged-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/icode/>

<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>

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 nearly all sub-Saharan African countries, including Seychelles. Only Eritrea and Lesotho have not yet reported its presence.

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

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 sources on FAW

CABI FAW Portal within the ISC contains identification guides, manuals (including the USAID/CIMMYT IPM manual), videos, photos, abstracts on the latest FAW research: <https://www.cabi.org/ISC/fallarmyworm>

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-ggws8q/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

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 detects FAW eggs, larvae, pupae and damage on maize crops is developed by Penn State University in collaboration with UNFAO:

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

FAO monitoring and interactive FAW map:

<https://app.powerbi.com/view?r=eyJrIjoiMzMxY2NmYmYtZDEwMS00ZTU0LTgwMzQtMDFhZjE3NDVjOTQ3IiwidCI6IjE2M2FjNDY4LWFiYjgtNDRkMCM0MWZkLWQ5ZGIxNWUzYjY5NiIsImMiOiJh9>

<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): Moderate AAW outbreaks were reported in Machinga, Shire Valley, Blantyre, and Salima Agricultural Development Divisions (ADD) in Malawi. The caterpillars were reported attacking mainly maize. Control was carried out by the affected farmers with technical and material assistance from the Ministry of Agriculture, Irrigation and Water Development (IRLCO-CSA).

Forecast: AAW outbreaks are likely to continue in Malawi, Mozambique, Zambia and Zimbabwe affecting late planted cereal crops. Trap operators are advised

to continue collecting moth catches and share trap data with the national forecasting officers.

Fully operational pheromone traps must be maintained at all time during cropping seasons starting at the beginning of the rains. Active surveillance and 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). Though not yet reported on a scale in Africa, SAW, a pest native to the Americas present from southern USA to Argentina, could be a serious threat to small-holder farmers across the continent. If arrived and established the pest could become an extra heavy burden to small-holder farmers for whom struggling to fend off other newly arrived invasive pests, such as FAW and indigenous species remains to be an uphill battle.

SAW 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 various flowers and watermelon

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. A female moth can lay 1,500-3,000 eggs under favorable temperature and host plant conditions over her lifetime.

Control operations for SAW can include natural enemies - parasitoids, predators, and pathogens; synthetic and biological pesticides, as well as botanical agents and other technologies.



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

The larvae of this pest are mostly external feeders (some can bore into fruits such as tomatoes, etc.) making direct application of safer, effective and affordable pesticides more effective than on FAW.

Quelea (QQU): QQU bird outbreaks were reported in Kirinyaga (Mwea), Kisumu and Tana River counties in **Kenya** and in Kilimanjaro Region in **Tanzania** during December. The birds were reported attacking in Kenya and rice in Tanzania. Aerial control operations were launched in Mwea in Kenya and in Kilimanjaro Region in Tanzania with DLCO-EA aircraft. Plans were underway to launch control operations in other

areas where outbreaks were detected - Kisumu and Tana River (DLCO-EA, IRLCO-CSA).

Forecast: Quelea birds are likely to continue being a problem to irrigated rice growers in Siaya, Busia, Kisumu Kirinyaga, and to sorghum in Tana River counties of Kenya and to rice and sorghum in Dodoma, Shinyanga, Morogoro and Mbeya Regions of Tanzania. QQU breeding is likely to have commenced in Mozambique and Zimbabwe and fledglings and adult are likely to be a problem to small grain cereal grain growers in these countries 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 December, 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 promotes an IPM approach to minimize risks associated with pesticide stockpiling. A judiciously executed triangulation of surplus stocks from countries with large inventories to countries that can safely and effectively 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 December with more some 8,500 ha treated in COR (7,235 in Eritrea and 1,247 in Sudan) and WOR (and 394 ha in Niger) during this month.

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	9,887~ + 20,000 ^D
Ethiopia	9,681~
Libya	25,000~
Madagascar	206,000~ + 100,000 ^D
Mali	3,600
Mauritania	40,000
Morocco	3,490,732 ^D
Niger	75,750~
Oman	10,000~
S. Arabia	89,357~
Senegal	156,000~
Sudan	167,803~
Tunisia	62,200 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 *African armyworm (Spodoptera expempta)*

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 *Anacridium melanorhodon (Tree Locust)*

APLC *Australian Plague Locust Commission*

APLC *Australian Plague Locust Commission Bands groups of hoppers marching pretty much in the same direction*

ASARECA *Association for Strengthening Agricultural Research in Eastern and Central Africa*

CABI *Center for Agriculture and Biosciences International*

CAC *Central Asia and the Caucasus*

CBAMFEW *Community-based armyworm monitoring, forecasting and early warning*

CERF *Central Emergency Response Fund*

CIT *Calliptamus italicus (Italian Locust)*

CLCPRO *Commission de Lutte Contre le Criquet Pélerin dans la Région Occidentale (Commission for the Desert Locust Control in the Western Region)*

CNLA(A) *Centre National de Lutte Antiacridienne (National Locust Control Center)*

COR *Central SGR Outbreak Region*

CPD *Crop Protection Division*

CRC *Commission for Controlling Desert Locust in the Central Region*

CTE *Chortoicetes terminifera (Australian plague locust)*

DDLC *Department of Desert Locust Control*

DLCO-EA *Desert Locust Control Organization for Eastern Africa*

DLMCC *Desert Locust Monitoring and Control Center, Yemen*

DMA	<i>Dociostaurus maroccanus</i> (Moroccan Locust)	LMC	<i>Locusta migratoriacapito</i> (Malagasy locust)
DPPQS	Department of Plant Protection and Quarantine Services, India	LMM	<i>Locusta migratoria migratorioides</i> (African Migratory Locust)
DPV	Département Protection des Végétaux (Department of Plant Protection)	LPA	<i>Locustana pardalina</i>
ELO	EMPRES Liaison Officers –	MoAFSC	Ministry of Agriculture, Food Security and Cooperatives
EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases	MoAI	Ministry of Agriculture and Irrigation
EOR	Eastern SGR Outbreak Region	MoARD	Ministry of Agriculture and Rural Development
ETOP	Emergency Transboundary Outbreak Pest	NALC	National Agency for Locust Control
Fledgling	immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully developed reproductive organs to breed	NCDLC	National Center for the Desert Locust Control, Libya
GM	GreenMuscle® (a fungal-based biopesticide)	NOAA (US)	National Oceanic and Aeronautic Administration
ha	hectare (= 10,000 sq. meters, about 2.471 acres)	NPS	National Park Services
ICAPC	IGAD's Climate Prediction and Application Center	NSD	Republic of North Sudan
IGAD	Intergovernmental Authority on Development (Horn of Africa)	NSE	<i>Nomadacris septemfasciata</i> (Red Locust)
IRIN	Integrated Regional Information Networks	OFDA	Office of U.S. Foreign Disaster Assistance
IRLCO-CSA	International Red Locust Control Organization for Central and Southern Africa	PBB	Pine Bark Beetle (<i>Dendroctonus</i> sp. – true weevils)
ITCZ	Inter-Tropical Convergence Zone	PHD	Plant Health Directorate
ITF	Inter-Tropical Convergence Front = ITCZ)	PHS	Plant Health Services, MoA Tanzania
FAO-DLIS	Food and Agriculture Organizations' Desert Locust Information Service	PPD	Plant Protection Department
Hoppers	young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)	PPM	Pest and Pesticide Management
JTWC	Joint Typhoon Warning Center	PPSD	Plant Protection Services Division/Department
Kg	Kilogram (~2.2 pound)	PRRSN	Pesticide Risk Reduction through Stewardship Network
L	Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)	QQU	<i>Quelea Qulelea</i> (Red Billed <i>Quelea</i> bird)
LCC	Locust Control Center, Oman	SARCOF	Southern Africa Region Climate Outlook Forum
		SCA	<i>Schistocerca cancellata</i> (South American Locust)
		SFR	<i>Spodoptera frugiperda</i> (SFR) (Fall armyworm (FAW))
		SGR	<i>Schistoseca gregaria</i> (the Desert Locust)
		SPI	<i>Schistocerca piceifrons piceiferons</i> (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*

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