

**Emergency Transboundary Outbreak Pests (ETOPs) Situation for December with a forecast through mid-February 2020**  
**résumé en français est inclus**

## SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**<sup>1</sup>): SGR situation remained very serious in the central outbreak region (COR) in December and close to 92,000 ha were treated in **Eritrea, Ethiopia, Oman, Egypt, Somalia, Sudan, Yemen** and **Saudi Arabia** during this month. Swarms from neighboring countries were also reported invading northern **Kenya** during late December and control operations were launched during early January. Swarms persisted in the eastern outbreak region (EOR) where swarms and groups were detected and controlled on some 96,000 ha in summer breeding areas along the **Indo-Pakistan** borders as well as in spring breeding areas in southeast **Iran** and western **Pakistan** during December. The western outbreak region (WOR) remained relatively calm and only 118 ha were treated during December.

**Forecast:** Owing to favorable ecological conditions, thanks to the unusual rainfall over the past months, coupled with persistent parental populations, breeding will continue in eastern Ethiopia and Somalia and swarms will form which if left unattended will further spread to northwestern Kenya, southwestern Ethiopia, and may even reach Uganda and perhaps South Sudan and threaten crops and pasture. Breeding will also continue along both sides of the Red Sea coasts in Sudan, Eritrea, Yemen and Saudi Arabia. Swarms that moved from summer breeding areas along the Indo-Pakistan borders to spring breeding areas in southern Iran western Pakistan will persist and begin breeding in the coming months. Small-scale breeding is likely in Algeria, Mauritania, Mali and Niger during the forecast period.

**Red (Nomadic) Locust** (*Nomadacris septemfasciata*) (**NSE**): NSE concentrations persisted in the primary outbreak areas in **Tanzania** and **Mozambique** where breeding conditions continued to improve from good rains that fell during the past months. A similar situation is expected to have been present in the outbreak areas in Malawi and Zambia.

**Tree Locusts**, *Anacridium* spp. (**ASP**): ASP outbreak persisted in Turkan and Marsabit countries in **Kenya** where acacia trees have been infested.

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

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

**South American Locust, *Schistocerca cancellata* (SCA):** No update was received during this month.

**Italian (CIT), Moroccan (DMA), and Asian Migratory Locusts (LMI):** Locust activities had ended in CAC and the region will remain calm until next spring.

**Fall Armyworm (*Spodoptera frugiperda*) (FAW):** FAW was reported affecting maize crop in Ethiopia, Tanzania, Malawi and Zimbabwe. It is highly likely that the pest was also present in other maize producing countries where it had already been detected (additional information can be found on pages 9-10).

**African Armyworm (AAW) (*Spodoptera exempta*):** AAW outbreak was reported in Zimbabwe, Zambia, Mozambique and Malawi during December and control was undertaken by affected farmers with technical and material support from Ministries of Agriculture.

**Quelea spp. (QSP):** QSP bird outbreaks were reported attacking sorghum in northeastern Ethiopia and aerial control was conducted.

*Active surveillance, monitoring and timely preventive and curative interventions as well as sharing ETOP information remain critical to abate the threats ETOPs pose to food security and livelihoods of vulnerable communities.*

**USAID/OFDA/PSPM** regularly monitors ETOPs 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, and research centers, academia, private sector, NGOs and others and issues concise, analytical bulletins to stakeholders. **End summary**

## RÉSUMÉ

**La situation du Criquet pèlerin (*Schistoseca gregaria* - SGR):** La situation SGR est restée très grave dans la région du foyer central (COR) en décembre et près de 92 000 ha ont été traités en Érythrée, en Éthiopie, à Oman, en Égypte, en Somalie, au Soudan, au Yémen et en Arabie saoudite au cours de ce mois. Des essaims de pays voisins ont également été signalés envahissant le nord du Kenya fin décembre et des opérations de lutte ont été lancées début janvier. Des essaims ont persisté dans la région de l'épidémie orientale (EOR) où des essaims et des groupes ont été détectés et contrôlés sur quelque 96000 ha dans les zones de reproduction estivale le long des frontières indo-pakistanaïses ainsi que dans les zones de reproduction printanière du sud-est de l'Iran et de l'ouest du Pakistan en décembre. La région ouest de l'épidémie (WOR) est restée relativement calme et seulement 118 ha ont été traités au cours de ce mois.

**Prévisions:** En raison des conditions écologiques favorables, grâce aux précipitations inhabituelles des derniers mois, associées aux populations parentales persistantes, la reproduction se poursuivra dans l'est de l'Éthiopie et en Somalie et des essaims se formeront qui, s'ils ne sont pas surveillés, se propageront davantage au nord-ouest du Kenya, au sud-ouest de l'Éthiopie, et pourrait même atteindre l'Ouganda et peut-être le Soudan du Sud et menacer les cultures et les pâturages. La reproduction se poursuivra également le long des deux côtés des côtes de la mer Rouge au Soudan, en Érythrée, au Yémen et en Arabie saoudite. Les essaims qui se sont déplacés des zones de reproduction estivale le long des frontières indo-pakistanaïses vers les zones de reproduction printanière du sud de l'Iran, dans l'ouest du Pakistan, persisteront et commenceront à se reproduire dans les prochains mois. Une reproduction à petite échelle est probable en Algérie, en Mauritanie, au Mali et au Niger au cours de la période de prévision

**Criquet nomade (*Nomadacris septemfasciata*) (NSE):** Les concentrations de NSE ont persisté dans les principales zones de flambée en Tanzanie et au Mozambique où les conditions de reproduction ont continué de s'améliorer grâce aux bonnes pluies tombées au cours des derniers mois. Une situation similaire devrait avoir été observée dans les zones d'épidémie au Malawi et en Zambie.

**Le criquet arborial, *Anacridium spp*:** L'épidémie de ASP a persisté dans les pays du Turkan et de Marsabit au Kenya où les acacias ont été infestés.

**Criquet Amérique centrale, *Schistocerca piceifrons piceiferons* (CAL):** 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 au cours de ce mois.

**Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI):** les activités acridiennes étaient terminées à CAC et la région restera calme jusqu'au printemps prochain.

**Chenille Légionnaire d'automne (*Spodoptera frugiperda*) (FAW):** La FAW a été signalée affectant la récolte de maïs en Éthiopie, en Tanzanie, au Malawi et au Zimbabwe. Il est très probable que le ravageur était également présent dans d'autres pays producteurs de maïs où il avait déjà été détecté (des informations supplémentaires peuvent être trouvées aux pages 9-10).

**Chenille Légionnaire africaine (AAW), *Spodoptera exempta*:** une épidémie d'AAW a été signalée au Zimbabwe, en Zambie, au Mozambique et au Malawi en décembre et le contrôle a été entrepris par les agriculteurs touchés avec le soutien technique et matériel des ministères de l'agriculture.

**Quelea spp. oiseaux (QSP):** Des foyers d'oiseaux QSP ont été signalés attaquant le sorgho dans le nord-est de l'Éthiopie et un contrôle aérien a été effectué.

La surveillance active, le suivi et les interventions préventives et curatives opportunes ainsi que le partage des informations ETOP restent essentiels pour réduire les menaces que les ETOP font peser sur la sécurité alimentaire et les moyens de subsistance des communautés vulnérables.

**USAID / OFDA / PSPM** surveille régulièrement les ETOP en étroite collaboration avec son réseau de PPD / DPV nationaux, d'entités régionales et internationales de surveillance et / ou de lutte antiparasitaire, y compris la FAO, la CLCPRO, le CRC, le DLCO-EA et l'IRLCO-CSA, et des centres de recherche, universités, secteur privé, ONG et autres et publie des bulletins analytiques concis à l'intention des parties prenantes. Fin de résumé

**Note:** All ETOP Bulletins and SITREPs, including previous ones can be accessed and downloaded on USAID Pest and Pesticide Monitoring website: [USAID Pest and Pesticide Monitoring](#)

### Weather and Ecological Conditions

In **COR**, unusually heavy and extended rainfall caused ecological conditions to remain favorable during December for locusts to persist and continue breeding.

In **EOR**, ecological conditions gradually declined in summer breeding areas although pockets of green vegetation persisted in some places. In the western part of the EOR, breeding conditions improved from Cyclone Pawan that also drenched the Horn of Africa during December.

In **WOR** significant precipitation was not reported and dry conditions persisted with favorable ecological conditions limited to wadis and a few places where annual vegetation persisted during December.

In the **NSE** outbreak regions, above normal seasonal rain was reported near Wembere, Malagarasi and North Rukwa Valley in Tanzania. Below normal to

normal rainfall was recorded in Buzi-Gorongosa and Dimba Plains in Mozambique, in Lake Chilwa Plain in Malawi as well as Kafue Flat in Zambia causing ecological conditions to sustain NSE and other ETOPS in the region IRLCO-CSA).

**CAC Region:** Cold and dry weather is expected to have prevailed in CAC during December (OFDA/PSPM).

**Note:** Changes in the weather pattern such as increased or decreased temperature and precipitation can contribute to ecological shift in ETOP habitats and could increase or decrease the risk of pest outbreaks, resurgence and emergence of new pests. For example, 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 regular ambient altitude due to warmer higher elevations.

The **Asian migratory locust**, an insect that normally has one generation per year, has begun breeding twice per year. These anomalies which are largely attributed to the change in the weather patterns and associated ecological shift

can become serious concerns to farmers, rangeland managers, crop protection experts, development and humanitarian partners, etc. Regular monitoring, documenting and reporting anomalies in pest behavior and on habitat shifts are crucial to help avoid/minimize potential damage to crops, pasture and reduce 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

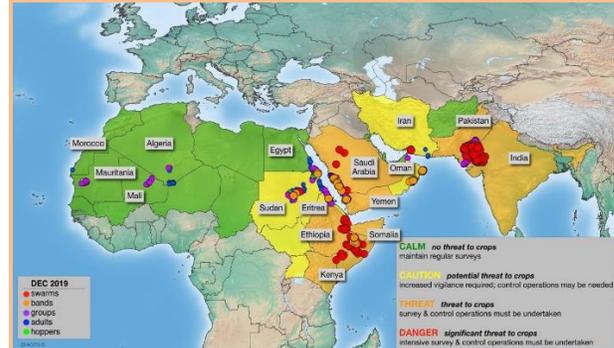
**SGR – COR:** The SGR situation remained very serious in the Horn of Africa as the pest continued further developing and threatening crops and pasture in **Ethiopia, Somalia and Kenya**. Swarms that developed in eastern **Ethiopia** and adjacent areas in **Somalia** moved to the Ogaden region and adjacent areas of central **Somalia** and reached southern **Somalia**, southeastern **Ethiopia** and later moved to northeast **Kenya**. On January 6<sup>th</sup>, a swam estimated to measure 30 square Km was reported arriving in Mandera, northeastern **Kenya**. Similarly, swarms that are believed to have originated in neighboring Somalia were reported in Kebridehar, Somali Administrative Region and some have been reported in Bale and Yabelo areas of Oromia Admin Region of Ethiopia during the first week of January.

Ground and aerial control operations are in progress in **Ethiopia** and control operations have begun in **Kenya** as of 6th January. Insecurity and a lack of resources and operational capacity continued undermining control operations in **Somalia** where only limited operations are occasionally carried out in the

northeastern part of the country (DLCO-EA, DLMCC/Yemen, FAO/Somalia, FAO-DLIS, LCC/Oman, PPD/Ethiopia, PPD/Somalia, PPD/Sudan).

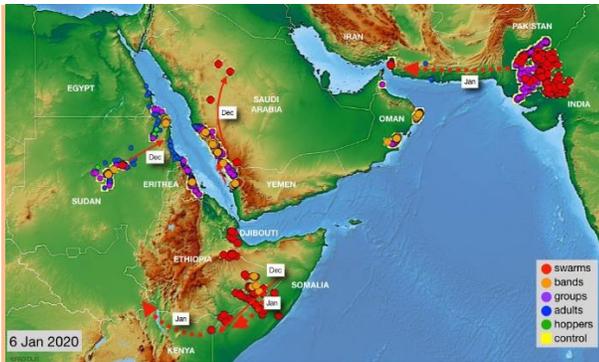
In **Ethiopia**, preliminary results of MoA-lead crop assessment indicated an overall crop loss of up to 4% with a substantial loss by farmers whose crop fields were first attacked along the flight path of the swarms (PPD/Ethiopia). Appropriate and routine surveillance, monitoring and timely control operations as well as assessments can significantly reduce crop and pasture losses.

Cognizant of the severity of the locust invasions and the potentially devastating losses to crops and pasture, GoE through MoA requested external support to enhance surveillance, monitoring and control interventions.



FAO-DLIS, 12/2019

In response to the appeal, USG through USAID/OFDA provided \$800,000 (more than 25 Million ETH Birr; GoE provided 21 Million ETH Birr to support the campaign at the time the appeal was issued). In addition, FAO/HQ allocated \$500,000 as part of its TCP project. It is expected that other bilateral and multilateral donors and international organizations are likely to assist GoE's efforts to abate the pest and save crops and pasture – the very livelihoods and food security of vulnerable communities and populations (DLCO-EA, FAO, OFDA/PSPM, PPD/Ethiopia).



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In **Somalia**, farmers are facing a serious threat from the locust invasions. Though, thorough assessments have yet to be conducted, it is likely that the pest has caused substantial damage to crop and pasture. If left unabated, the current locust invasions that have already spilled over to northern **Kenya**, southeastern **Ethiopia** and southwestern **Somalia** will further spread causing greater damage to the region. There is an urgent need to support surveillance and control operations as soon as possible, more so in Somalia, to abate further invasions and save crops and pasture of vulnerable people and communities that have already suffered from drought and flooding. **Somalia** MinAgri&I's PPD technical and material capacity needs to be strengthened and sufficient resources made available to effectively tackle the devastating locust invasions.

FAO/Somalia office is coordinating training on locust surveillance, monitoring and reporting as well as spraying, biopesticide application etc., in collaboration with DLCO-EA to strengthen the capacity of PPD/Somalia (DLCO-EA, FAO/Somalia, PPD/Somalia).

Locust surveillance, monitoring and control operations continued in **Eritrea, Sudan, Oman, and Saudi Arabi** and limited activities were conducted in **Egypt** and **Yemen** during this month.

Overall, close to 80,000 ha were reported treated in these countries in total during this month. *The insecurity situation and lack of resources in **Yemen** significantly contributed to unabated locust developments which resulted in multiple swarms from the country invading northeastern and eastern **Ethiopia**, northern **Somalia** and the Red Sea coastal areas during the past months. Unabated and undetected swarms/locusts from **Yemen** also invaded **Saudi Arabia** and to a lesser extent, **Oman** during the past months* (DLCO-EA, DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Sudan

**Forecast:** During the forecast period, swarms will mature and lay eggs in the Ogaden, and hopper bands will develop Ethiopia and Somalia. Swarms will likely reach northwestern Kenya, southwestern Ethiopia, and possibly northeast **Uganda** and eastern **South Sudan**. There is a low risk of breeding in Moyale, Mandera, or Wajir, **Kenya**. Some locusts from eastern Ethiopia may also migrate to **Djibouti** and northern Somalia, and perhaps **Eritrea** during the forecast period. Breeding will also continue on the Red Sea coasts in **Sudan, Eritrea, Yemen, and Saudi Arabia**. In **Oman** some activities will likely occur in areas where ecological conditions remain favorable due to rainfall from Cyclone Pawan (DLCO-EA, DLMCC/Yemen, FAO-DLIS, LCC/Oman, OFDA/PSPM, PPD/Ethiopia, PPD/Somalia, PPD/Sudan).

**NOTE:** During the 2007 swarms that formed in **Yemen** invaded **Ethiopia** and **Somalia** and further bred and rapidly spread to eastern **Ethiopia**, southern and western **Somalia**, northeastern **Kenya** and southern and western **Ethiopia** where they caused severe damage to crop and pasture. Control operations needed substantial amount of resources. *BUT this time around the situation*

*Appears to be **much more serious and requires greater attention.** END NOTE*

**SGR - EOR:** In South-West Asia, intensive control operations continued along both sides of the Indo-Pakistan border where numerous swarms formed. Control operations treated 22,113 ha in India, Iran = 2,372 ha in Iran and 71,388 ha in Pakistan respectively during December (FAO-DLIS).

**Forecast:** With ecological conditions gradually drying up in summer breeding areas along the **Indo-Pakistan** borders, more swarms will likely migrate westward to spring breeding areas in Baluchistan and southwest **Pakistan** and southeast **Iran** and some may reach Oman and beyond (FAO-DLIS).

**SGR – WOR:** SGR situation remained generally calm and control operations only treated 25 ha in **Algeria** and 93 ha in northwest **Mauritania** using biopesticides during December. Overall, the situation in this region remained calm during this month (ANLA/Chad, CNLA/Mauritania, CNLAA/Morocco, CNLA/Tunisia, CNLAP/Mali, FAO-DLIS, INPV/Algeria).

**Forecast:** Small-scale breeding is likely in northwest Mauritania and perhaps Mali, but the situation in WOR will remain calm during the forecast period (ANLA/Chad, CNLAP/Mali, CNLA/Mauritania, CNLAA/Morocco, CNLA/Tunisia, FAO-DLIS, INPV/Algeria).

*Active surveillance, monitoring, preparedness and timely preventive interventions remain critical to avert any significant locust developments and the potential threat they to food security and livelihoods of vulnerable communities (FAO-DLIS, OFDA/PSPM).*

**Red (Nomadic) Locust (NSE):** NSE concentrations persisted in the primary outbreak areas in Ikuu Katavi plains, Malagarasi Basins, Rukwa Valley plains in Tanzania and Dimba plains in Mozambique. NSE populations in Ikuu/Katavi plains, Malagarasi Basin, Wembere plains and North Rukwa Valley in Tanzania, Lake Chilwa/Lake Chiuta plains and Mptasanjoka Dambo in Malawi; Dimba and Buzi-Gorongozo plains in Mozambique; and Kafue Flats in Zambia were expected to have laid eggs during December (IRLCO-CSA).

**Forecast:** Given favorable ecological conditions from good seasonal rains, successful breeding is expected to increase locust numbers in the primary outbreak areas in Tanzania, Malawi, and Mozambique and during the next breeding season in March/April 2020. Hopper surveillance and timely control operations are critical to abate the threats the pest poses (IRLCO-CSA, OFDA/PSPM).

**Tree Locusts, *Anacridium spp.* (ASP):** ASP outbreak persisted in Turkana and Marsabit countries in Kenya where acacia trees have been infested (IRLCO-CSA, PPD/Kenya).

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

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

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

No update was received at the time this Bulletin was compiled.

**Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC):** Locust activities have ended in CAC regions (FAO-ECLO, OFDA/PSPM).

**Forecast:** No activities are expected in the region till next spring (FAO-ECLO, OFDA/PSPM).

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

FAW was reported affecting maize crop in Ethiopia, Tanzania, Malawi and Zimbabwe during December. It is highly likely that the pest was also present in other maize growing countries in Africa, Asia and elsewhere where it had already been detected (IRLCO-CSA, OFDA/PSPM, PPD/Ethiopia, DLCO-EA/Tanzania).

**Forecast:** FAW will likely continue affecting rain-fed and irrigated maize and other crops across sub-Saharan Africa, Asia, the Pacific Regions and elsewhere during the forecast period. Active monitoring, surveillance, reporting and preventive interventions remain critical to abate the damage (OFDA/PSPM).

**Note:** *With its voracious appetite and more than 100 species of plants to choose from, it is highly unlikely it will ever go hungry and terminate its presence in affected countries (Reuters, OFDA/PSPM). End note.*

**Key Activity update:** The USAID/OFDA sponsored Community-Based FAW Monitoring, Surveillance and Management project (CBFAMFEW) was implemented in six countries in eastern Africa from 2017 through August 2019. The project trained close to 1,400 senior PPD staff, district

agricultural experts, lead farmers, extension agents, lead farmers and village leaders. More than 10,000 farmers and villagers were sensitized on FAW-360 in participating countries. A network of forecasters and scouts were also established across 300 villages in project countries. Strong relationships were established among experts and implementing partners and commitments from participating countries were garnered to ensure sustainability of collective and individual gains of the initiative.

**Note:** *Several species of natural enemies of FAW have been identified in Ethiopia, Kenya, Tanzania, Madagascar, India, etc. and studies are being conducted on these natural enemies to better understand their efficacy, environmental impacts and safety, etc. Some are being tested alongside other agro-ecological tools, e.g., push-pull technology, etc to develop effective, affordable, accessible, adaptable and sustainable means of managing the pest. End note.*

**Information resources**

**NOTE:** *Highly hazardous pesticides cannot and must not be considered or used for FAW control. END NOT*

USAID/BFS and OFDA co-funded IPM based FAW management guidance document is available in English and French and will soon be available in Portuguese language:  
[https://www.usaid.gov/sites/default/files/documents/1867/Fall-Armyworm-IPM-Guide-for-Africa-Jan\\_30-2018.pdf](https://www.usaid.gov/sites/default/files/documents/1867/Fall-Armyworm-IPM-Guide-for-Africa-Jan_30-2018.pdf)  
 CBAMFEW project sites:  
<http://usaid.maps.arcgis.com/apps/Viewer/index.html?appid=8ff7a2eefbee4783bfb36c3e784e29cb>

BFS and SAWBO (Scientific Animation Without Borders) developed a video clip on FAW:  
<https://sawbo-animations.org/video.php?video=/www.youtube.com/embed/5rxlpXEK5q8>

USAID Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP) contains a list of

pesticides assessed as relatively safer for use against FAW:

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

CABI FAW Portal: identification

guides: <https://www.cabi.org/ISC/fallarmyworm>

*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>

*FAO interactive FAW Risk-Index heat map to help monitor potential risk of FAW infestation in countries where the pest has been reported*

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

NURU, a mobile phone application 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/icode/>

Safer, affordable, and adaptable IPM-based pest management and assessment tools remains critical in abating FAW infestations and minimize crop damage.

**African Armyworm (AAW):** AAW outbreaks were reported in Mbire District, Mashonaland Central Province in **Zimbabwe** where an estimate 570 ha of maize and sorghum were reported damaged. AAW outbreaks were also reported in Karonga, Mzuzu, Salima, Lilongwe, Kasungu and Machinga Districts in **Malawi** where some 34,551 ha of crop and grass were reported affected and of which 19,174 ha was crop land. In **Zambia** armyworm outbreaks were reported in Mazabuka and Itezhi Tezhi, Namwala Districts, where some 205 ha of crop were reported attacked. Affected farmers launched control interventions with material and technical assistance from MinAgri (IRLCO-CSA)

**Forecast:** AAW activities will likely continue in the southern outbreak areas during the forecast period (IRLCO-CSA, OFDA/PSPM).

**Note:** OFDA developed printable and web-based interactive maps for AAW project sites where an AAW project was implemented as well as in other AAW frontline countries:

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

<http://www.fao.org/3/CA1089EN/ca1089en.pdf>

OFDA/PSPM is considering a similar map for the CBFAMFEW countries as well.

**Southern Armyworm (*Spodoptera eridania*) (SAW/SER).** SAW was not reported during this month.

*Strong quarantine services and vigilance, monitoring and surveillance remain essential to prevent invasive pests invading a new territory.*

**Quelea sp. (QSP):** Escapee QSP populations that were reported attacking sorghum in Wello and Showa in Amhara administrative region in **Ethiopia** and fresh additions likely continued attacking small grain crop fields. QSP populations were detected and control operations were planned in Kibimba Rice Schemes in **Uganda** during previous month, but additional information was not available at the time this bulletin was compiled and the threat may still exist. No QSP outbreaks were reported elsewhere during December (DLCO-EA, IRLCO-CSA, PPD/Ethiopia).

**Forecast:** QSP will likely continue being a problem to small grain crops in irrigated and/or rainfed fields during the forecast period (OFDA/PSPM).

**Facts:** QSP birds can travel ~100 km/day in search of food. An adult *Quelea* bird can consume 3-5 grams of grain and destroy the same amount each day. A medium density *Quelea* 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 during this month, but rodent pests are constant pre- and post-harvest threats to crops, produce and infrastructure. Vigilance and rapid responses remain critical to abate major damage.

**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, and contaminate making it unfit for human consumption, and the zoonotic disease this pest carry/transmit.

**All ETOP front-line countries** must maintain regular monitoring and surveillance as needed. During cropping seasons, regular scouting is critical to avoid crop damage/losses. 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. It is critical that lead farmers, field scouts, community forecasters and others remain vigilant and report ETOP detections to relevant authorities as quickly as immediately.

## OFDA's Contributions to ETOP Abatement Interventions

USAID/OFDA/PSPM is sponsoring an operational research on soil amelioration to manage the Senegalese grasshopper (*OSE*) through Arizona State University. *OSE* is a notorious pest of cereal crops and pasture causing serious damage to small-scale farmers in its wide geographic coverage which extends from the Canneries, Cape Verde to nearly all sub-Saharan regions of Africa to India and neighboring countries across a wide swath. *OSE* occurs more frequently than several other grasshopper/locust species and is a constant threat to small-scale farmers.

USAID/OFDA/PSPM is interacting with interested parties to explore means and ways to expand innovative technologies to AAW, FAW and SGR affected countries to contribute to food security and livelihoods of vulnerable people and communities.

The online Pesticide Stock Management System (PSMS) that was developed by FAO with financial assistance from donors, including USAID/OFDA, continues benefiting participating countries across the globe. Thanks to the system, SGR frontline countries and others are effectively managing their strategic pesticide stocks and have been able to minimize/avoid accumulation of unusable and toxic obsolete pesticides and empty pesticide containers.

**Note:** A sustainable Pesticide Stewardship (SPS) can contribute to strengthening 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 boundaries and geographic regions. **End note.**

**OFDA/PSPM** does not support highly hazardous pesticides. It promotes an IPM approach to minimize risks associated with pesticide poisoning, stockpiling, and environmental pollution. An informed procurement and judiciously executed triangulations of surplus stocks from countries with large inventories of usable products to countries where they are much needed and can be safely and effectively utilized is win-win and worth considering

### Inventory of Strategic Pesticide Stocks for SGR Control

Inventory of Strategic SGR Pesticide Stocks changed in all regions as close to 188,000 ha in total were reported treated in affected countries during the month (see details below: Algeria =25, Egypt = 30, Eritrea =11,078, Ethiopia = 8,410, India = 22,113, Iran = 2,372, Mauritania = 93, Oman = 1,710, Pakistan = 71,388, Saudi Arabia = 43,798, Sudan = 26,846, and Yemen = 80) (CNLA/Algeria, CNLA/Mauritania, DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Ethiopia, PPD/Sudan).

Table 1. Estimated inventory of strategic SGR Pesticide Stocks in Frontline Countries during this month

Country	Quantity, l/kg*
Algeria	1,186,034~
Chad	34,100
Egypt	10,253 ULV, 45,796
Eritrea	527~; -11,078?
Ethiopia	10,543~; -8,410?
Libya	24,930~
Madagascar	206,000~ + 100,000 <sup>D</sup>

Mali	3,540
Mauritania	39,803
Morocco	3,412,374 <sup>D</sup>
Niger	75,701~
Oman	9,953~; -1,710?
Saudi Arabia	23,379~ -43,798?
Senegal	156,000~
Sudan	103,482; -26,864?
Tunisia	62,200 obsolete
Yemen	35,092 <sup>D</sup> ; -80? 180 kg GM~

\*Includes different kinds of pesticide and formulations - ULV, EC and dust;

~ data may not be the 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 = *GreenMuscle*<sup>TM</sup> (fungal-based biological pesticide)

? = this amount may have been added to the existing stock

### 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	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  
 QSP *Quelea* species (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

### **Contact Person:**

If you need more information or have any questions, comments or suggestions or know someone who would like to freely subscribe to this report or unsubscribe, please, reach out to:

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