

**Emergency Transboundary Outbreak Pest (ETOP) Situation Bulletin for
October 2020 with a forecast through mid-December**
résumé en français est inclus

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹): The SGR situation continued being worrisome in the central outbreak region (COR) where numerous swarms were reported causing damage to crop and pasture in northeast Ethiopia during October. In Somalia, swarms moved from the northeast to the Ogaden and the central part of the country. Egg laying, hatching and hopper and band formations increased in eastern Sudan and the Red Sea coast. Hoppers and hopper bands also continued developing in the Red Sea coasts in Eritrea Red Sea, Yemen and Saudi Arabia. Control operations treated more than 438,170 ha in the Horn of Africa, mostly in Ethiopia where close to 335,450 ha treated during this month, and the Red Sea coasts of Eritrea, Sudan, Saudi Arabia and Yemen. Remnant maturing swarms were controlled on 318 ha in northwest Kenya during October. The situation improved in the eastern outbreak region (EOR) and adults were controlled on 220 ha in Pakistan and 40 ha in southeast Iran. No locusts were reported in India during this month. The situation remained generally calm in WOR and only insignificant breeding occurred in Mauritania, Niger, Chad, and Algeria. <http://www.fao.org/ag/locusts/en/info/info/index.html>

Forecast: In COR, hatching and band formations are expected to continue in eastern Ethiopia (Ogaden) and Somalia where new swarms will be forming from early December on and if unabated threaten southeast Ethiopia, southern Somalia, and northeast Kenya. Breeding will continue along the Red Sea coasts in Eritrea, Sudan, Saudi Arabia, and Yemen continue forming hopper bands and possibly swarms during the forecast period. Local breeding is likely in northwest Kenya. Vigilance remains critical to abate increased locust infestations. In EOR, low numbers of adults are likely to persist in southeast Iran and southwest Pakistan, but significant populations are not expected in the region during the forecast period. WOR will likely remain calm with limited breeding occurring in northwest Mauritania during the forecast period. <http://www.fao.org/ag/locusts/en/info/info/index.html>

Red (Nomadic) Locust (*Nomadacris septemfasciata*) (**NSE**): NSE were reported in primary outbreak areas in Malawi, Mozambique, Tanzania and Zambia.

African Migratory Locust: *Locusta migratoria migratorioides* (**LMI**): LMI has been reported in Angola, Botswana, Namibia, Zambia and Zimbabwe.

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

Tree Locusts, *Anacridium* spp. (ASP): ASP report was not received during this month.

Central American Locust, *Schistocerca piceiferons* (CAL): CAL was reported in Central American countries.

South American Locust, *Schistocerca cancellata* (SCA): SCA activities were reported in some South American countries.

Italian (CIT), Moroccan (DMA), and Asian Migratory Locusts (LMI): DMA, CIT and LMI activities have ended and will remain calm till next spring.

Fall Armyworm (*Spodoptera frugiperda*) (FAW): FAW was likely present in maize and other cereal crops.

African Armyworm (AAW) (*Spodoptera exempta*): AAW outbreak was not reported during this month.

Quelea spp. (QSP): QSP outbreak was reported on small grain crops in Ethiopia.

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 de la SGR a continué d'être préoccupante dans la région centrale de l'épidémie (COR) où de nombreux essaims ont été signalés, causant des dommages aux cultures et aux pâturages dans le nord-est de l'Éthiopie en octobre. En Somalie, des essaims se sont déplacés du nord-est vers l'Ogaden et le centre du pays. La ponte, les éclosions et les formations de larves et de bandes ont augmenté dans l'est du Soudan et sur la côte de la mer Rouge. Les larves et les bandes larvaires ont également continué à se développer sur les côtes de la mer Rouge en Érythrée, en mer Rouge, au Yémen et en Arabie saoudite. Les opérations de lutte ont traité plus de 438 170 ha dans la Corne de l'Afrique, principalement en Éthiopie où près de

335 450 ha ont été traités au cours de ce mois, et sur les côtes de la mer Rouge en Érythrée, au Soudan, en Arabie saoudite et au Yémen. Les essaims restants à maturité ont été contrôlés sur 318 ha dans le nord-ouest du Kenya en octobre. La situation s'est améliorée dans la région orientale du foyer (EOR) et les ailés ont été contrôlés sur 220 ha au Pakistan et 40 ha dans le sud-est de l'Iran. Aucun criquet n'a été signalé en Inde au cours de ce mois. La situation est restée généralement calme dans le WOR et seule une reproduction insignifiante a eu lieu en Mauritanie, au Niger, au Tchad et en Algérie.

<http://www.fao.org/ag/locusts/en/info/info/index.html>

Prévisions: Au COR, les éclosions et les formations de bandes devraient se poursuivre dans l'est de l'Éthiopie (Ogaden) et en Somalie, où de nouveaux essaims se formeront à partir de début décembre et, s'ils ne sont pas atténués, menaceront peut-être le sud-est de l'Éthiopie, le sud de la Somalie et le nord-est du Kenya. La reproduction se poursuivra le long des côtes de la mer Rouge en Érythrée, au Soudan, en Arabie saoudite et au Yémen, formant des bandes larvaires et éventuellement des essaims au cours de la période de prévision. Une reproduction locale est probable dans le nord-ouest du Kenya. La vigilance reste essentielle pour réduire l'augmentation des infestations acridiennes. Dans l'EOR, de faibles effectifs d'ailés persisteront probablement dans le sud-est de l'Iran et le sud-ouest du Pakistan; mais des populations importantes ne sont pas attendues dans la région pendant la période de prévision. WOR restera probablement calme avec une reproduction limitée dans le nord-ouest de la Mauritanie au cours de la période de prévision. <http://www.fao.org/ag/locusts/en/info/info/index.html>

Criquet nomade (*Nomadacris septemfasciata*) (NSE): NSE ont été signalées dans les principales zones de flambée au Malawi, au Mozambique, en Tanzanie et en Zambie.

Criquet migrateur africain: *Locusta migratoria migratorioides* (LMI): LMI a été signalée en Angola, au Botswana, en Namibie, en Zambie et au Zimbabwe

Le criquet arborial, *Anacridium spp*: (ASP): Le rapport ASP n'a pas été reçu ce mois-ci.

Criquet Amérique centrale, *Schistocerca piceifrons piceiferons* (CAL): CAL a été signalée dans les pays d'Amérique centrale.

Criquet d'Amérique du Sud, *Schistocerca cancellata* (SCA): Des activités de SCA ont été signalées dans certains pays d'Amérique du Sud.

Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI): Les activités DMA, CIT et LMI sont terminées et le resteront jusqu'au printemps prochain.

Chenille Légionnaire d'automne (*Spodoptera frugiperda*) (FAW): La FAW était probablement présente dans le maïs et d'autres cultures céréalières.

Chenille Légionnaire africaine (AAW), *Spodoptera exempta*: aucune épidémie d'AAW n'a été signalée ce mois-ci.

Quelea spp. oiseaux (QSP): Une flambée de QSP a été signalée sur des cultures de petites céréales en Ethiopie.

La surveillance active, le suivi et les interventions préventives et curatives opportunes ainsi que le partage des information 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, including previous issues can be accessed and downloaded on USAID Pest and Pesticide Monitoring website:

[USAID Pest and Pesticide Monitoring](#)

Additional resources on ETOPs can be found on the last pages of this Bulletin.

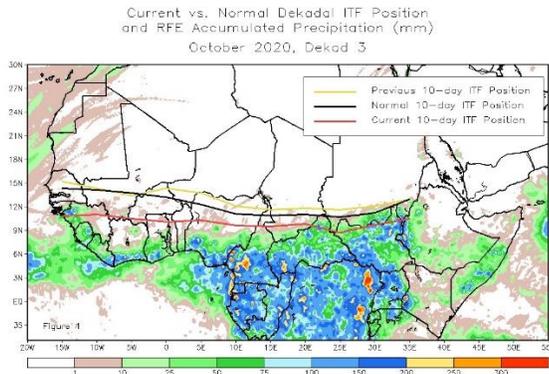
Weather and Ecological Conditions

From October 21-31, the Intertropical Fron (ITF) continued its rapid southern retreat. The ITF was located anomalously south of the long-term average position along its entire length – west and east. This abnormal position led to below-average rainfall

across much of the Sudanian-Quinean region of West Africa; but brought persistent above-average rainfall over parts of northeastern South Sudan. The mean western portion of the ITF was approximated at 10.3N and was to the south of the mean position by 2.6 degrees. The mean eastern portion of the ITF was located at 9.7N, which was to the south of the climatological position by 1.7 degrees. Figure 1 displays the current position of the ITF relative to the long-term average position during the 3rd dekad and its previous position during the 2nd dekad of October. Figures 2 and 3 are time series, illustrating the latitudinal values of the western and

eastern portions of the ITF, respectively, and their seasonal evolutions since April 2020. Good rains fell in eastern Ethiopia and central Somalia during the October improving breeding conditions. Favorable conditions persisted along both sides of the southern Red Sea. In WOR, vegetation continued drying out in summer breeding areas of West Africa and western Sudan (NOAA, FAO-DLIS).

Figure 1



Forecast through Jan 2021: There is a chance to favor below-average rainfall across East Africa including the Lake Victoria region during Nov 2020 - Jan 2021. There is also a slight to moderate tilt in the odds to favor below-average rainfall over southwestern Angola and northwestern Namibia (NOAA, 11/2020).

Figure 2 – Latitude value of ITF position in the western region

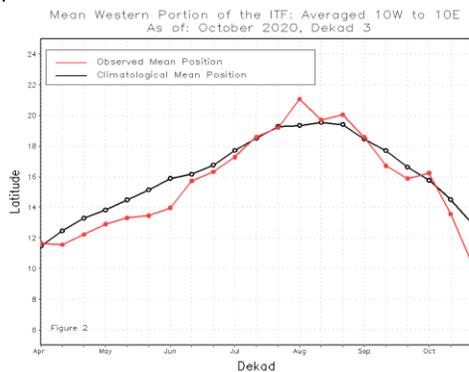
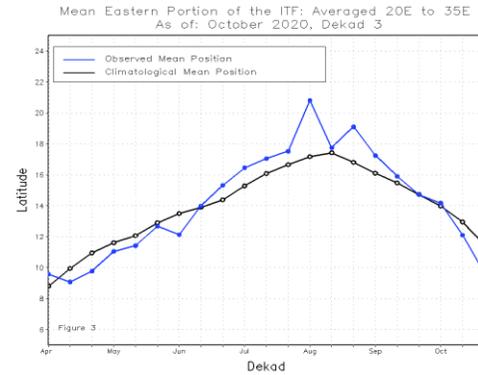


Figure 3. Latitude position of ITF in its eastern part



In EOR, the withdrawal of the monsoon rains caused vegetation to continue dry out in the summer breeding areas along both sides of the Indo-Pakistan border, dry conditions prevailed elsewhere in the region (FAO-DLIS).

In the NSE region, dry and hot weather continued and is likely to last till the seasonal rains begin in November.

CAC Region: In CAC, mostly dry weather prevailed during this month.

SGR proliferation vis-a-vis climate factors

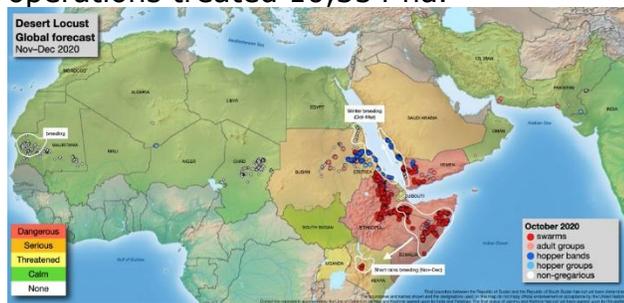
Note: Changes in the weather pattern such as increased or decreased temperatures and precipitation can contribute to an ecological shift in ETOP habitats and could increase or decrease the risk of pest outbreaks, resurgence and/or emergence of new pests. The extended SGR outbreaks and upsurges are partially attributed to the change in the weather pattern, i.e., extensive and above normal rainfall partly associated with the occurrence of multiple cyclones over a period of less than two years – May 2018 to December 2019 in the COR region.

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 **Desert Locust** (*Schistoseca gregaria* - **SGR²**): Intensive surveillance and control operations were launched against locusts in COR where numerous swarms and hoppers were reported causing damage to crop and pasture in northeast Ethiopia during October. Several swarms from northern Ethiopia moved to Eritrea, south to the Rift Valley region and east to Somali region. Control operations treated close to 335,450 ha in Ethiopia alone during this month (the highest number of ha treated in the country in a single month since the invasion began). In Somalia, swarms moved from the northeast to the Ogaden and central Somalia and control operations treated 12,974 ha. Egg laying, hatching and hopper and band formations increased in eastern Sudan and the Red Sea coast and control operations treated more than 52,910 ha during this month. Hopper bands are also reported on the Red Sea coast of Eritrea and control operations treated 10,354 ha.



FAO-DLIS, October 2020,

Summer breeding has ended in the interior of Yemen; hoppers and bands were detected and controlled on 4,609 ha on the Red Sea coasts. Hoppers and bands were also reported on the southern coast in Saudi Arabia and controlled on

21,290 ha. In Kenya, maturing remnant swarms were controlled on 318 ha in the northwest during October; no locusts were reported in Djibouti (FAO-DLIS, DLMCC/Yemen, LCC/Oman, PPD/Sudan, SPPV/Djibouti).

Forecast: In COR, breeding will continue and increase locust numbers in eastern Ethiopia, northern Somalia, across Eritrea, Sudan, Saudi Arabia and Yemen where ecological conditions will remain favorable. Several swarms that invaded Eritrea from Ethiopia and southwest Saudi Arabia and Yemen will continue breeding along the Red Sea coasts during the forecast period (DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Ethiopia, SPPV/Djibouti).



SGR situation for August October-November 2020, FAO-DLIS)

SGR - EOR: The SGR situation in EOR improved significantly and only some residual populations were controlled on 220 ha in Pakistan and some adult groups were treated on 40 ha in southeast Iran. No locusts were reported in India during this month (FAO-DLIS).

Forecast: In EOR, low numbers of adults are likely to persist in southeast Iran and southwest Pakistan, but significant numbers are not expected in the region during the forecast period (FAO-DLIS).

² Definitions of all acronyms can be found at the end of the report.

SGR – WOR: In WOR, the situation remained generally calm and only solitary, isolated, immature, maturing and mature, low density adults were seen south of Mao around Jeddah, Biltine, Kalait and Fada and isolated, low density solitaro-transiens mixed instar hoppers were detected south of Fada in Chad. Small-scale breeding occurred in Mauritania, Niger and Algeria. Mali, Morocco, Tunisia and other countries in the region remained calm during this month (ALNA/Chad, CNLA/Mauritania, CNLAA/Morocco, CNLA/Tunisia, CNLAP/Mali, FAO-DLIS, FAO-DLIS).

Forecast: Small-scale breeding may occur in northwest Mauritania, but the rest of the region will likely remain calm during the forecast period (CLA/Mauritania, ALNA/Chad, FAO-DLIS).

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

Red (Nomadic) Locust (NSE): In October, NSE swarms were reported in Lake Chilwa plains in Malawi (MoA survey team); in the Malagarasi Basin, Ikuu-Katavi plains and North Rukwa Valley in Tanzania where extensive vegetation burning is expected to have caused increased concentrations. NSE was also reported in Kafue Flats in Zambia and control operations treated close to 10,700 ha, and in Buzi-Gorongosa and Dimba plains in Mozambique (IRLCO-CSA).

Forecast: The chances of swarms escaping from the primary breeding areas and invade cropping areas are

high. IRLCO-CSA and concerned MoAs planning on carrying out surveillance and control (BHA/TPQ, IRLCO-CSA).

African Migratory Locust (LMI): LMI swarms persisted in Sesheke, Mwandi, Kazungula, Sioma and Senanga districts in the Western and Southern provinces of Zambia. Medium to large swarms were observed flying in westerly and northern direction in search of suitable vegetation during early October and localized crop damage was reported as most fields were empty at the time. The IRLCO-CSA and MoA/Zambia with the support from Zambia Airforce conducted survey and control operations from early October in Mwandi, Sesheke and Kazungula districts of the Western province. Control operations treated swarms on some 10,700 ha by aerial and ground operations. During the last week of October, control operations shifted north to Mongu, Sioma, Senanga and Nalolo districts where swarms were reported. Though not confirmed, extensive control operations were also launched during October in Okavango in Botswana (IRLCO-CSA).

Forecast: It is likely that, remnant populations will breed and give rise to another generation of hoppers as ecological conditions will improve with the start of rains expected from November. The IRLCO-CSA and the Ministry of Agriculture will continue surveillance and control operations.

FAO Southern Africa regional office has developed a Southern Africa Regional Locust Response Action Plan (SALRAP) in collaboration with SADC, IRLCOCSA and other partners. The Action Plan estimated USD 3.877 M for locust operations through May 2021 and USD

15M for relief and rehabilitation and livelihood support. FAO is in contact with SADC, MoAs, USAID, WB, DFID, IRLCO-CSA. Following a SADC request earlier FAO has released USD 500,000 from its TCP project to support surveillance, capacity strengthening and to some extent response in the most affected countries (FAO/Southern Africa).

Central American Locust -

Schistocerca piceifrons (CAL): CAL was reported in No update was received at the time this bulletin was compiled. [SPI is a pest of economic importance in Mexico and Central America and feeds on hundreds of species of plants including agave, banana, beans, corn, cotton, peanut, rice, sesame, soybean, sorghum, sugarcane, several fruit trees, etc.]

South American Locust, Schistocerca cancellata (SAL) – Flying lobster: In Argentina, 9 swarms were controlled, most of which came from Bolivia and Paraguay and some from local breeding (La Rioja). 2nd generation egg laying is expected to commence in the coming weeks. Bolivia and Paraguay are on high alert (SENASA -Argentina).

<https://www.voanews.com/americas/argentina-battles-locust-plague-northern-province>.

Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC): Locust activities have ended in the region for the most part and no additional activities are expected till next spring (BHA/TPQ/P&PM) <http://www.fao.org/locusts-cca/en/>

Forecast: The situation will remain calm till next spring.

Fall armyworm (FAW): FAW infestations were reported in irrigated and short rain areas in Tanzania highlands. It is expected that the pest

was present in irrigated and in-season maize and other cereal crops in invasion and outbreak countries and regions (BHA/TPQ, DLCO, PHS/Tanzania).

Forecast: FAW is expected to continue affecting rain-fed and irrigated maize and other cereal crops across sub-Saharan Africa, Asia, the Pacific Regions and elsewhere during the forecast period (BHA/TPQ).

Areas suitable to Fall Armyworm

Regions with little forest cover, a minimum annual temperature of 18-26 °C and receiving 500-700 mm of rainfall in the three wettest months are prone to fall armyworm infestation as predicted by the species distribution models based on occurrences in Africa and the Americas.

ENVIRONMENTAL SUITABILITY INDEX

Not suitable Marginal Suitable Highly suitable
0 10 20 30 40 50 60 70 80 90 100



Source: CAB, 2019. Invasive Species Compendium, Wallingford, UK: CAB International.
P. N. Data, 15/06/2019

REUTERS

Active monitoring, surveillance, reporting and preventive and curative actions remain critical to abate significant crop damage (BHA/TPQ).

Recent Events on FAW: The first meeting of the Technical Committee of the Global Action for Fall Armyworm Control (GAFC) was conducted on **May 18, 2020**. The GAFC is a pioneering initiative that aims to mobilize USD 500 million over the period 2020–2022 to take radical, direct and coordinated measures to fight FAW at a global level. The 3 key objectives of the GAFC are to:

- Establish a global coordination and regional collaboration on monitoring, early warning, and intelligent pest management of FAW;
- Reduce crop losses caused by FAW and
- Reduce the risk of further spread of FAW to new areas (Europe and South Pacific).

Key Activity update: BHA/TPQ/FSL is working on innovative intervention projects to benefit large numbers of small-scale farming communities in affected countries with the intention to scale-up cross different FAW prone regions. This initiative will build on experiences gained over the past several years, including OFDA (BHA) and RFS sponsored initiatives.

Note: Several species of FAW natural enemies have been identified in Ethiopia, Kenya, Tanzania, Madagascar, India, etc. and are being further studied to determine their efficacy, environmental impacts and safety. **End note.**

African Armyworm (AAW): AAW outbreaks were not reported during this month (BHA/TPQ, DLCO-EA).

Forecast: AAW activities may commence in the northern and eastern outbreak regions in southcentral Africa following the seasonal rains (BHA/TPQ).

Note: OFDA developed printable and web-based interactive maps for AAW: <http://usaid.maps.arcgis.com/apps/Viewer/index.html?appid=8ff7a2eefbee4783bfb36c3e784e29cb> OFDA/PSPM is considering a similar map for the CBFAMFEW countries.

Strong surveillance, monitoring and quarantine enforcement remain critical to prevent invasive pest species.

Quelea sp. (QSP): QSP infestations were reported in Amhara and Oromia regions in Ethiopia and aerial control operation was launched from 31st October. No report was received elsewhere during this month (DLCO, IRLCO-CSA).

Forecast: QSP will likely continue being a threat to small grain cereal crops in several countries (BHA/TPQ).

Facts: QSP birds can travel ~100 km/day in search of food. An adult QSP can consume 3-5 grams of small grain and destroy the same amount each day. A medium density QSP 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 it is likely that the pest continued being a problem to crops and produce (BHA/TPQ).

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 diseases the pest can carry/transmit.

All ETOP front-line countries must maintain regular monitoring and surveillance and launch control interventions as needed. Regular crop scouting is critical to avoid damage/losses. Invasion countries must also remain on alert. Regional and national ETOP entities - DLCO-EA, IRLCO-CSA, DLCCs, DLMCC, CNLAs, National DPVs and PPDs, ELOs, etc., are encouraged to continue sharing ETOP information with stakeholders as often as possible. Lead farmers, field scouts, community forecasters and others must remain vigilant and report ETOP detections to

relevant authorities as quickly as possible.

OFDA’s Contributions to ETOP Abatement Interventions

USAID/OFDA/PSPM is sponsoring an operational research through Arizona State University to develop a tool to manage the Senegalese grasshopper (OSE).

OSE is a notorious pest of cereal and vegetable crops as well as pasture and causes serious damage to small-holder farmers in its wide geographic coverage extending from the Canneries, to Cape Verde to nearly all sub-Saharan Africa regions to India and beyond. This pest occurs more frequently than several other grasshopper/locust species and is a constant threat to small-holder farmers. USAID/BHA/TPQ continuously explores parties interested in developing and expanding innovative technologies to help minimize the impacts of ETOPs on food security and livelihoods of the most vulnerable peoples and communities across regions.

The online Pesticide Stock Management System (PSMS) that was developed by FAO with financial assistance from donors, including USAID/OFDA, that continued benefiting participating countries across the globe was halted due to security and server switch. FAO will be reinstating the system. Thanks to the system, SGR frontline countries and others had been able to effectively manage their strategic pesticide stocks and minimize/avoid accumulation of unusable 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 promotes an IPM approach to minimize risks associated with pesticide poisoning, stockpiling, and environmental contamination. 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 is worth considering

Inventory of Strategic Pesticide Stocks for SGR Control

During October, more than 438,000 ha were treated in COR and EOR combined (Note: in Ethiopia alone, more than 335,450 ha were reported treated during this month, the highest for the country so far).

Table 1. Estimated inventory of strategic SGR Pesticide Stocks in frontline and invasion countries.

Country	Quantity, l/kg*
Algeria	1,186,034~
Chad	34,100
Egypt	10,253 ULV, 45,796
Eritrea	527~
Ethiopia	110,543~
Libya	24,930~
Kenya	~
Madagascar	206,000~ + 100,000 ^D
Mali	3,540
Mauritania	39,803

Morocco	3,412,374 ^D
Niger	75,701~
Oman	9,953~
Saudi Arabia	23,379~
Senegal	156,000~
Somalia	~
Sudan	103,482
South Sudan	
Tunisia	62,200 obsolete
Uganda	
Yemen	35,000 ^D ; 180 kg GM~
<p>*Includes different pesticides and formulations - ULV, EC and dust;</p> <p>~ data may not be current;</p> <p>^D = Morocco donated 100,000 l of pesticides to Madagascar and 10,000 l to Mauritania in 2015</p> <p>^D = In 2013 Morocco donated 200,000 l to Madagascar</p> <p>^D = Saudi donated 10,000 to Yemen and pledged 20,000 l to Eritrea</p> <p>^{DM} = Morocco donated 30,000 l of pesticides to Mauritania</p> <p>GM = <i>Green Muscle</i>TM (fungal-based biological pesticide, e.g., NOVACRID)</p>	

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 *Dociostaurus maroccanus (Moroccan Locust)*

DPPQS *Department of Plant Protection and Quarantine Services, India*

DPV *Département Protection des Végétaux (Department of Plant Protection)*

ELO *EMPRES Liaison Officers -*

EMPRES *Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases*

EOR *Eastern SGR Outbreak Region*

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

For additional information or questions, comments or suggestions, etc., please reach out to:

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<https://www.usaid.gov/what-we-do/working-crises-and-conflict/responding-times-crisis/how-we-do-it/humanitarian-sectors/agriculture-and-food-security/pest-and-pesticide-monitoring>

Additional resources on SGR and other ETOPs

SGR

USAID Pest Monitoring:

<https://www.usaid.gov/what-we-do/working-crises-and-conflict/responding-times-crisis/how-we-do-it/humanitarian-sectors/agriculture-and-food-security/pest-and-pesticide-monitoring>

Archived ETOP Bulletins:

<https://www.usaid.gov/what-we-do/working-crises-and-conflict/responding-times-crisis/how-we-do-it/humanitarian-sectors/agriculture-and-food-security/pest-and-pesticide-monitoring/archive>

UN/FAO Desert Locust Watch

<http://www.fao.org/ag/locusts/en/info/info/index.html>

FAO Locust Hub

<https://locust-hub-hqfao.hub.arcgis.com/>

FAO Locust Emergency Appeal for Greater Horn of Africa and Yemen

http://www.fao.org/fileadmin/user_upload/emergencies/docs/Greater%20Horn%20of%20Africa%20and%20Yemen%20%20Desert%20locust%20crisis%20appeal%20%20May%202020.pdf

<http://www.fao.org/emergencies/crisis/desertlocust/en/>

FAO visuals on SGR

<http://tv.fao.org/>

FAO Desert Locust Crisis

<http://www.fao.org/emergencies/crisis/desertlocust/en/>

CIT, DMA and LMI – FAO-PPPD

<http://www.fao.org/locusts-cca/en/>

DLCO-EA

<http://www.dlco-ea.org/final/index.php/about-us>

FAO/Central Region Locust Control Commission

<http://desertlocust-crc.org/Pages/index.aspx?CMSId=8&lang=EN>

FAO/Western Region Locust Control Commission

<http://www.fao.org/clcpro/fr/>

FAO Locust Watch - Central Asia and Caucasus

<http://www.fao.org/locusts-cca/en/>

IGAD Climate Predication and Application Centres

<https://www.icpac.net/news/desert-locust-projection-october-2020/>

USAID supports for locust operations in the CAC Region: <http://www.fao.org/locusts-cca/programme-and-donors/projects-donors/en/>

FAO SGR Response Overview Dashboard
<http://www.fao.org/locusts/response-overview-dashboard/en/>

FAO Locust Hub
<https://locust-hub-hqfao.hub.arcgis.com/>
<http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html>

FAW
USAID FtF FAW
<https://www.agrilinks.org/post/fall-armyworm-africa-guide-integrated-pest-management>

FAW management animation SAWBO
<https://sawbo-animations.org/video.php?video=//www.youtube.com/embed/5rxlpXEK5g8>

<http://www.cabi.org/isc/datasheet/29810>

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

FAO NURU FAW Application
<http://www.fao.org/news/story/en/item/1141889/code/>

USAID FAW PEA/PERSUAP
<https://ecd.usaid.gov/repository/pdf/50065.pdf>

FAO FAW Monitoring and Early warning System
<http://www.fao.org/3/CA1089EN/ca1089en.pdf>

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

<https://www.invasive-species.org/wp-content/uploads/sites/2/2019/03/Fall-Armyworm-Evidence-Note-September-2017.pdf>

AAW
<http://www.armyworm.org/latest-armyworm-forecast-irlco-csa-oct-2018/>

FEWS NET
<https://fews.net/>

NOAA CPC
<https://www.cpc.ncep.noaa.gov/products/international/itf/itcz.shtml>