

Emergency Transboundary Outbreak Pest (ETOP) Situation Bulletin for November 2021 with a forecast through mid-January 2022
résumé en français est inclus

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹): In the central outbreak region (COR), SGR continued developing in northeastern Somalia where 18,405 ha were treated. In southern Ethiopia, swarms that arrived from northeastern Somalia were controlled on 2,126 ha during November. In Sudan hoppers and adults were controlled on 17,738 ha in the interior of the country and adults were detected on the Red Sea coast. Scattered adults were treated on 100 ha in the southeastern Red Sea coast in Egypt and scattered adults and hoppers were detected and controlled on 97 ha on the Red Sea coast in Eritrea. Small-scale breeding occurred on the southern coast and egg laying is reported on the Red Sea coast and immature swarms in the interior of Yemen during November. In the western outbreak region (WOR) scattered hoppers and adults in Mali and isolated adults in neighboring Sahel north Africa were reported. The eastern outbreak region (EOR) remained calm during this month.

Forecast: In COR, swarms will form in northeastern Somalia from escapee hoppers and migrate to southern Ethiopia/northern Kenya and some may reach southern Somalia. Breeding is likely in southern Ethiopia and northern Kenya where swarms arrived from northeastern Somalia earlier, and form hopper bands and may be augmented with more swarms from northeastern Somalia in the coming weeks. Limited breeding is likely on both sides of the Red Sea coasts due to moisture deficit. The WOR and EOR regions will likely remain calm during the forecast period.

Red (Nomadic) Locust (*Nomadacris septemfasciata*) (**NSE**): NSE concentrations persisted in Lake Chilwa/Lake Chiuta plains and Mpatsanjoka Dambo in Malawi. Significant NSE populations continue in Ikuu-Katavi, Malagarasi, Rukwa plains and Bahi Valley in Tanzania; Kafue Flats in Zambia; Buzi-Gorongosa and Dimba plains in Mozambique; breeding was expected to have started due to the early onset of rains.

African Migratory Locust: *Locusta migratoria migratorioides* (**LMI**): Low-density population of LMI persisted in Simalaha Plains, Western Province of Zambia.

Malagasy locust (*Locust migratoria capito* – **LMC**): No update was received at the time this bulletin was compiled. However, LMC activities are expected to

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

commence with the onset of the seasonal rains. At the request of the GoM, FAO/ECLO prepared an action plan for the upcoming breeding season.

Tree Locusts, *Anacridium spp.* (ASP): No ASP activities were reported during this month.

Central American Locust, *Schistocerca piceiferons* (SPI)(CAL): No update was received 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 Asian Migratory Locusts (LMI): DMA, CIT and LMI activities are expected to have ended in the CCA regions.

Fall Armyworm (*Spodoptera frugiperda*, J. E. Smith) (FAW): Infestations of FAW was reported in irrigated maize in Malawi, Kenya and Zimbabwe. FAW presence is expected in rainfed and irrigated fields across regions where the pest presence has been confirmed.

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

Quelea spp. (QSP): QSP outbreaks were reported in Mati Ethiopia, Narok, and Kirinyaga Counties in Kenya and Kilimanjaro and Manyara Regions in Tanzania.

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

USAID/BHA/TPQ regularly monitors ETOPs in close collaboration with its global network of PPDs/DPVs, regional and international pest monitoring and control entities, FAO, CLCPRO, CRC, DLCO-EA, and IRLCO-CSA, and research centers, academia, private sector, NGOs and others and issues monthly analytical ETOP Bulletins to stakeholders. **End summary**

RÉSUMÉ

La situation du Criquet pèlerin (*Schistoseca gregaria* - SGR): Dans la région centrale de l'épidémie (COR), SGR a continué à se développer dans le nord-est de la Somalie et 18 405 ha ont été traités. Dans le sud de l'Éthiopie, des essaims arrivés du nord-est de la Somalie ont été contrôlés sur 2 126 ha en novembre. Au

Soudan, des larves et des ailés ont été contrôlés sur 17 738 ha à l'intérieur du pays et des ailés ont été détectés sur la côte de la mer Rouge. Des ailés épars ont été traités sur 100 ha sur la côte sud-est de la mer Rouge en Égypte et des ailés épars et des larves ont été détectés et contrôlés sur 97 ha sur la côte de la mer Rouge en Érythrée. Une reproduction à petite échelle a eu lieu sur la côte sud et des pontes sont signalées sur la côte de la mer de Rea et des essaims immatures dans l'intérieur du Yémen en novembre. Dans la région ouest de la résurgence (WOR), des larves et des ailés épars au Mali et des ailés isolés dans le Sahel voisin d'Afrique du Nord ont été signalés. La région de l'est de l'épidémie (EOR) est restée calme au cours de ce mois.

Prévisions: Dans le COR, des essaims se formeront dans le nord-est de la Somalie à partir de larves échappées et migreront vers le sud de l'Éthiopie/le nord du Kenya et certains pourraient atteindre le sud de la Somalie. Une reproduction est probable dans le sud de l'Éthiopie et le nord du Kenya où des essaims sont arrivés plus tôt du nord-est de la Somalie, et forment des bandes larvaires et pourraient s'accroître avec davantage d'essaims du nord-est de la Somalie dans les semaines à venir. Une reproduction limitée est probable des deux côtés des côtes de la mer Rouge en raison d'un déficit hydrique. Les régions WOR et EOR resteront probablement calmes au cours de la période de prévision.

Criquet nomade (*Nomadacris septemfasciata*) (NSE): Les concentrations de NSE ont persisté dans les plaines du lac Chilwa/lac Chiuta et Mpatsanjoka Dambo au Malawi. D'importantes populations de criquets pèlerins continuent d'infester Ikuu-Katavi, Malagarasi, les plaines de Rukwa et la vallée de Bahi en Tanzanie ; Appartements Kafue en Zambie; Les plaines de Buzi-Gorongosa et de Dimba au Mozambique et on s'attend à ce que la reproduction ait commencé en raison de l'arrivée précoce des pluies (pluies d'octobre/novembre).

Criquet migrateur africain: *Locusta migratoria migratorioides* (LMI): Une faible densité de population de LMI a persisté dans les plaines de Simalaha, dans la province occidentale de la Zambie.

Criquet migrateur capito, (LMI-C): Aucune mise à jour n'a été reçue au moment de la rédaction de ce bulletin. Cependant, les activités LMIC devraient commencer avec le début des pluies. À la demande du GoM, la FAO/ECLO a préparé un plan d'action pour la prochaine saison de reproduction.

Le criquet arborial, *Anacridium spp*: (ASP): Aucune activité de l'ASP n'a été signalée au cours de ce mois.

Criquet Amérique centrale (CAL): Aucune mise à jour n'a été reçue au moment de la rédaction de ce bulletin.

Criquet d'Amérique du Sud, *Schistocerca cancellata* (SCA/SAL): Aucune mise à jour n'a été reçue au moment de la rédaction de ce bulletin.

Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI): Les activités du DMA, du CIT et du LMI devraient avoir pris fin dans les régions du CCA.

Chenille Légionnaire d'automne (*Spodoptera frugiperda*, J. E. Smith) (FAW): De faibles infestations de CLA ont été signalées dans le maïs irrigué au Malawi, au Kenya et au Zimbabwe. La présence de la chenille légionnaire d'automne est attendue dans les champs pluviaux et irrigués des régions où la présence du ravageur a été confirmée.

Chenille Légionnaire africaine (AAW): Légionnaire d'Afrique (AAW) (*Spodoptera exempta*): Aucun foyer d'AAW n'a été signalé au cours de ce mois.

Quelea spp. oiseaux (QSP): *Quelea* spp. (QSP): des épidémies de QSP ont été signalées dans les comtés de Mati en Éthiopie, de Narok et de Kirinyaga au Kenya et dans les régions du Kilimandjaro et de Manyara en Tanzanie.

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 / BHA / 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/ECLO, 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 for ETOPs can be found on the last pages of this Bulletin.

Weather and Ecological Conditions

In COR, a tropical depression brought good rain to the northeastern tip of Somalia on 24 and 25. Light showers were reported in southeastern Ethiopia during the 1st dekad of November. Good rains fell on the extreme southeast of Ethiopia, along the northern Kenya border and southeast Somalia. Conditions

have begun to improve along the Red Sea coastal areas where rainfall began.

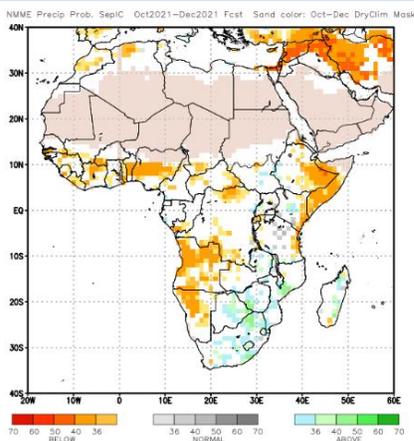
Breeding conditions remained unfavorable in WOR and EOR regions and only limited showers were reported in some locations during this month.

Most of the NSE outbreak areas received rainfall causing grasses to sprout in most of the outbreak areas.

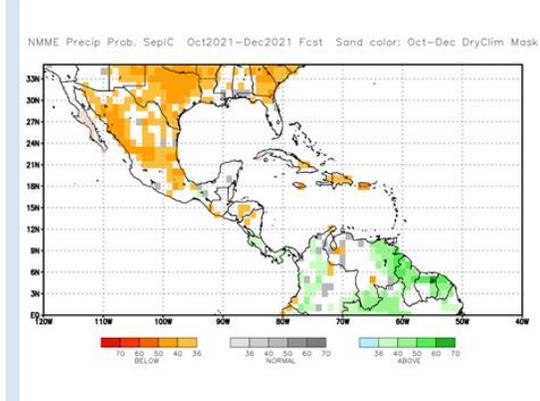
CCA Region: Significant weather anomalies were not observed in CCA region during this period.

Weather forecast for October through December 2021 (NOAA, 9/21)

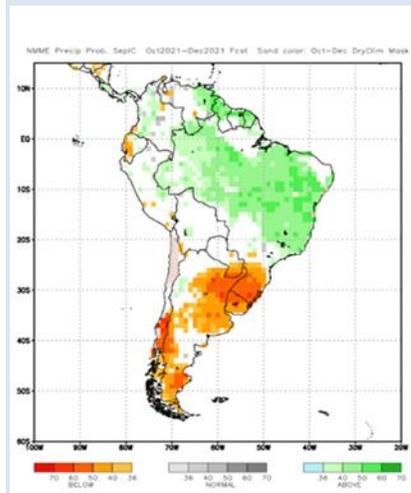
The forecast calls for a slight to moderate tilt in the odds to favor below-average rainfall in parts of the Gulf of Guinea region during this time. There is also a slight to moderate tilt in the odds to favor below-average rainfall in the western portions of **Southern Africa**, parts of DRC, and much of equatorial **East Africa** as related to La Nina.



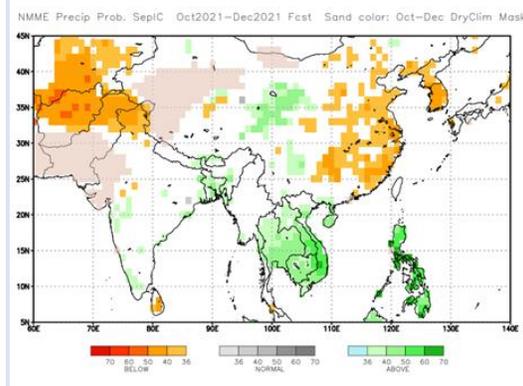
There is a slight tilt in the odds to favor below-average rainfall over the central sector of **Central America**.



The forecasts call for a moderate tilt in the odds to favor above-average rainfall over the northern portions of **South America**.

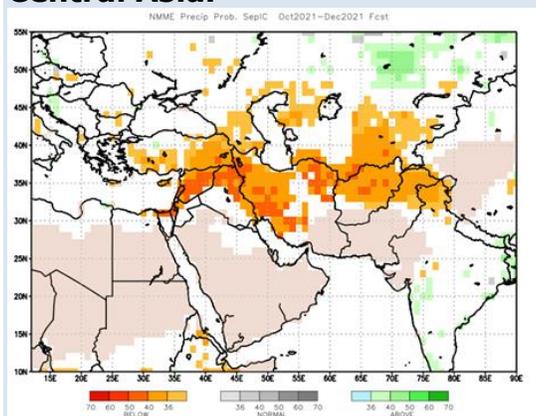


There is a slight to moderate tilt in the odds to favor above-average rainfall over **Southeast Asia**.



There is a moderate tilt in the odds to favor-below-average rainfall over much of

Central Asia.

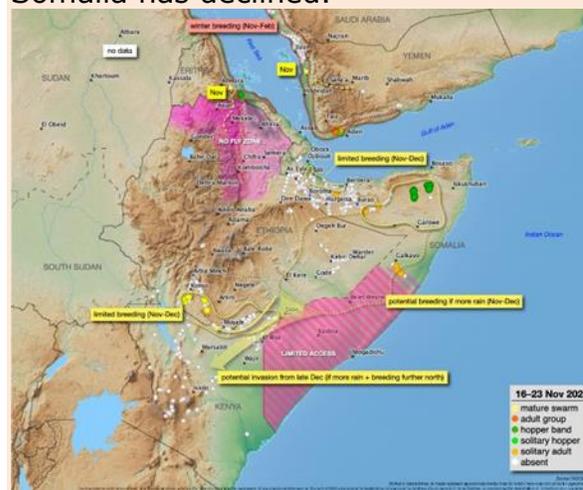


ETOP proliferation vis-a-vis climate factors

Note: Climate change induced weather anomalies contribute to an ecological shift in ETOP habitats, thereby triggering risks in the outbreaks and resurgence of existing ETOPs and/or the emergence of new and invasive pest species. The frequency, extent and payload of ETOP appearances, prevalence, and upsurges are partially attributed to the changes in the weather patterns - extensive, and above normal rainfall partly associated with the occurrence of multiple cyclones or persistent drought, that significantly impact pest proliferation causing additional stresses to food security and livelihoods of the most vulnerable communities and populations – case in point: multiple cyclones that occurred in the western Indian Ocean, in the Arabian Peninsula and the Horn of Africa region in less than two years, from May 2018 to December 2019, lead to major SGR upsurges and outbreaks that continued impacting the COR region through 2021 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

The **Desert Locust** (*Schistoseca gregaria* - **SGR²**): SGR continued its presence in northeastern Somalia where aerial and ground surveillance and control operations treated 18,405 ha during this month. In southern Ethiopia, aerial and ground operations continued and controlled swarms that arrived from northeastern Somalia on 2,126 ha during this month. The chance of swarms from southern Yemen migrating to northern Somalia has declined.



SGR situation and forecast (FAO-DLIS)

In Sudan hoppers and adults were controlled on 17,738 ha in the interior of the country and adults were also detected on the Red Sea coast. Scattered adults were treated on 100 ha in the southeastern Red Sea coast in Egypt and adults and hoppers were controlled on 97 ha on the Red Sea coast in Eritrea. In Yemen, small-scale breeding occurred on the southern coast and egg laying is reported on the Red Sea coast and immature swarms in the interior during November. No locusts were reported elsewhere in COR during this month.

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

Forecast: Breeding in northeastern Somalia plateau will likely augment previous locusts that reached southern Ethiopia and adjacent areas in northern Kenya that could begin breeding in areas of favorable conditions. Some swarms may also move to southern Somalia. Swam migration from northern Ethiopia to Eritrea is expected to have ended. Adult locusts from the interior of Sudan will move to Red Sea coast and breeding will likely continue along both sides of the Red Sea coasts during the forecast period.

SGR – WOR: Ecological conditions remained unfavorable across WOR and only a few scattered hoppers and adults were observed in Mali and isolated adults were detected in Algeria, Mauritania, Morocco and Niger during this month.

Forecast: WOR will remain generally calm during the forecast period.

SGR - EOR: The region remained calm, and no locusts were reported in Afghanistan, India, Iran, or Pakistan during this month.

Forecast: EOR will likely remain calm during the forecast period.

NOTE: *Though at an early developmental stage, innovative technologies, such as drones, for high-resolution images in remote sensing are being explored. On trial bases, use of drones for locust monitoring, and limited control in localized and sensitive and hard to reach areas showed promising results. While the range of agricultural oriented drones may be limited for large-area pest control purposes, such as massive swarms and hopper bands, there are interests among countries and partners to work on several parameters associated with such technologies, including air space access*

*protocols and other issues. Crowd sourcing and cloud sourcing for data collection, sharing, etc. are another effort that can be of value to ETOP operations. Dynamic population modeling and biotope modeling, from CIRAD and ICIPE, respectively, and accounting for associated parameters such as soil moisture, vegetation, etc. will likely contribute to better understand ETOP – DL phenology, ecology, habitat range, etc. **End note.***

Red (Nomadic) Locust (NSE): NSE concentrations and swarms persisted in Lake Chilwa/Lake Chiuta plains and Mpatsanjoka Dambo in Malawi and significant populations continue to infest Ikuu-Katavi, Malagarasi, Rukwa plains and Bahi Valley in Tanzania; Kafue Flats in Zambia; Buzi-Gorongosa and Dimba plains in Mozambique.

Forecast: NSE breeding is likely to have started in areas that had received rainfall during October and November. Hatching and formation of hopper bands is expected to start from January into February in areas where significant parental populations were present, and rainfall was reported during October/November.

African Migratory Locust (LMI):

Low-density population LMI persisted in Simalaha Plains, Western Province of Zambia.

Forecast: LMI is expected to begin breeding in areas of recent rainfall. Regular monitoring and surveillance remain essential to prevent any major development and outbreaks.

Malagasy locust (Locust migratoria capito – LMIC): No update was received at the time this bulletin was compiled;

however, breeding is likely as the season rains commence. In anticipation of the next breeding cycle that will follow the beginning of the seasonal rains from October 2021, and at the request of MoA/Madagascar, FAO-ECLC has prepared a joint action plan for the next campaign. The action plan focuses on four key components - 1. Improve monitoring capacity and analysis of the locust situation, 2. Strengthen locust control capacity, 3. Protect human health safety and the environment as well as 4. coordinate and assess the action plan. Resources have been pledged by the Government of Germany to support the proposed action plan. BHA/TPQ and the Geo team will continue monitoring the situation in collaboration with field staff and provide updates advice as often as necessary.

Forecast: Should the seasonal rains commence on time; locusts will likely begin developing and breed in the primary outbreak areas and become a problem down the line.

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

Central American Locust - *Schistocerca piceifrons* (SPI/CAL): SPI (CAL): No update was received at the time this bulletin was compiled. However, from October on, CAL may have shown an increase in Central American.

Forecast: Earlier limited aggregation in CA was reported, but significant populations were not predicted during November. In Mexico and CA in general,

preventive control strategies are implemented at the solitary level using *Metarhizium acridium* and chemical control (Pech).

[Note: *CAL is a pest of economic importance in Mexico and in CA in general and it is known to attack hundreds of species of plants of economic importance, including agave, banana, beans, corn, cotton, peanut, rice, sesame, soybean, sorghum, sugarcane, several fruit trees].*



SENESA, Pech – SENESA, Mexico)

South American Locust, *Schistocerca cancellata* (SCA) (a.k.a. Flying lobster): No report was received at the time this bulletin was compiled.

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

Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Caucasus and Central Asia (CCA): No update was received at the time this Bulletin was compiled, locust activities are expected to have ended in CCA regions.

Forecast: Locust activities will remain inactive during the forecast period.

Fall armyworm (FAW): Low infestations of FAW was reported in irrigated maize in Malawi, Kenya and Zimbabwe. The affected farmers carried out control with assistance from the Ministry of Agriculture.

Forecast: FAW is likely to continue affecting rain-fed and/or irrigated maize and other cereal crops across sub-Saharan Africa, Asia, and elsewhere during the forecast period.

Active monitoring, surveillance, reporting, and timely control interventions remain critical to prevent any major damage to crops that can severely affect food security and economic well-being of resource challenged peoples and communities across FAW prone countries.

NOTE: The Food and Agriculture Organization of the United Nations (FAO) engaged in a transformative, coordinated Global Action for Fall Armyworm Control (GAFC). With an estimated total budget of USD 500 million (USD 450 million for the Global Action and USD 50 million for Global Coordination), GAFC is planned to be implemented in 65 [target] countries across Africa, Near East and Asia-Pacific from 2020 to 2022.

The GAFC is a pioneering initiative that aims to take radical, direct, and coordinated measures to fight FAW at a global level with the 3 key objectives to:

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

BHA/TPQ is working with various partners on intervention projects to benefit small-scale farming communities in affected countries with the intention to scale-up gains across different FAW prone regions and consistent with the spirit of GAFC.

These initiatives build on experiences gained over the past several years, including outcomes of projects and programs supported through legacy OFDA, legacy BFS, CGIARs, FAO, national partners, and several other entities.



(Source: Prasanna, 2021)

Note: Several species of natural enemies of FAW have been identified in Ethiopia, Kenya, Tanzania, Madagascar, India and elsewhere and are under rigorous investigations to determine their efficacy, effectiveness, environmental impacts, safety, and other relevant parameters before they are released for extensive use. **End note.**

African Armyworm (AAW): AAW was not reported in outbreak and/or invasion areas during this month.

Forecast: Significant AAW appearance is unlikely during the forecast period

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

Quelea species (QSP): QSP flocks were reported threatening rice crop in Lukaya in Kalungu Districts in Central Uganda where control operations were launched with assistance from PPD/MoA

and crop damage was prevented. Flocks were reported causing damage to irrigated rice in Kibaha, Coast region, Mombo, Korogwe district and Moshi, Kilimanjaro and Manyara Regions in Tanzania and aerial control was underway. In Ethiopia, aerial control continued in Merti Oromo region. QSP outbreaks were reported in Narok, and Kirinyaga Counties in Kenya.

Forecast: QSP outbreaks are likely to continue being a problem to small grain cereal growers across different regions.

Facts: QSP 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 kg to 10,000 kg of seeds/day – amount enough to feed 12,000-20,000 people/day.

Rodents: No update was received during this month, but it is likely that the pest continues being a problem to pre- and post-harvest crops and produce across regions and will remain being a problem.

FACTS: On average, an adult rat can consume 3-5 gm of food (grain, etc.) per day; a population of 200 rats/ha (a very low density/unit area) can consume a quantity enough to feed an adult sheep/day, not to mention the multiple times that amount of food the rats can damage, destroy, and contaminate making it unfit for human consumption; rats are also zoonotic diseases vectors and transmitters.

NOTE: Acute food insecurity hotspots outlook – the below map shows several countries and regions that are exposed to and/or are food insecure and vulnerable

to ETOP invasions, including locusts, FAW and several other stressors, such as drought, COVID pandemic, flooding, conflicts, etc. (Map source: FAO-WFP, August to November 2021 prediction).

END NOTE

All ETOP front-line countries must maintain regular monitoring and surveillance operations as well as launch control interventions in a timely manner. 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, ELOs, National DPVs and PPDs, etc., are encouraged to continue sharing ETOP information with stakeholders, including neighboring countries, and humanitarian and development partners, etc., as often as possible. Lead farmers, field scouts, community forecasters and others must remain vigilant and report ETOP detections to relevant authorities in their jurisdiction as quickly and as often as possible.

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

BHA's Contributions to ETOP Abatement Interventions

USAID/BHA/TPQ is supporting operational research through a DRR with Arizona State University to develop a tool to manage the Senegalese grasshopper (OSE) with a vision for translating the usability of these tools across regions and perhaps across continents.

OSE is a notorious pest of cereal and vegetable crops and pasture and causes serious damage to small-holder farmers across 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 farmers and pastoralists.

USAID/BHA/TPQ will continue its support through a DRR project to strengthen national and regional capacity of the Caucasus and Central Asia (CCA) countries that are constantly affected by three major locust species – Moroccan locust, Italia locust and the Migratory locust. These locusts affect food security and livelihoods of more than 25 million people across CCA regions.

USAID/BHA/TPQ continues with its efforts and supports for applied/operational research in testing, improving, and expanding innovative technologies to help minimize the impacts of ETOPs on food security and livelihoods of vulnerable peoples and communities across low-income countries and regions and promotes and encourages collaboration among countries and potential partners.

The online Pesticide Stock Management System (PSMS) that was developed by FAO with financial assistance from donors, including USAID Legacy OFDA, that continued benefiting participating countries across the globe was halted due to an IT issue - internet security and server switch. FAO is working on reinstating the system. Thanks to the system, SGR frontline countries and others had been able to effectively manage their strategic [pesticide] stocks and avoid unnecessary accumulations of unusable stocks and empty containers.

Note: A sustainable Pesticide Stewardship (SPS) can contribute to strengthening pesticide delivery system (PDS) at the national and regional levels.

A viable SPS can be effectively established by linking key stakeholders across political boundaries and geographic regions. A strong and viable PDS can effectively reduce pesticide related human health risks, minimize environmental pollution, reduce pest control costs, improve food security, and contribute to the national economy. **End note.**

BHA/TPQ promotes an IPM approach, consistent with the Agency policies and procedures, to help minimize health risks and environmental contamination associated with misuse and management of pesticides. An informed procurement and judiciously executed triangulations of surplus usable stocks between countries is worth considering.

Inventory of Strategic Pesticide Stocks for SGR Control

During November, aerial and ground operations treated 38,483 ha (18,405 ha in Somalia, 17,738 ha in Sudan, 2,126 ha in Ethiopia, 97 ha in Eritrea and 100 ha in Egypt) compared to 7,970 ha during October.

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

Country	Quantity, l/kg*
Algeria	1,186,034~
Chad	65,270
Egypt	10,253 ULV, 45,796~
Eritrea	10,750~
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	5,000
Saudi Arabia	23,379~
Senegal	156,000~
Somalia	
Sudan	103,482~
South Sudan	
Tunisia	62,200 obsolete
Uganda	
Yemen	10,000; 180 kg GM

*Includes different pesticides 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 through triangulation
^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, e.g., NOVACRID)

LIST OF ACRONYMS

AAW *African armyworm (Spodoptera exempta)*
 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*
 BHA *Bureau for Humanitarian Assistance*
 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	Schistocerca cancellata (South American Locust)
LMC	Locusta migratoriacapito (Malagasy locust)	SFR	Spodoptera frugiperda (SFR) (Fall armyworm (FAW))
LMI	Locusta migratoria migratorioides (African Migratory Locust)	SGR	Schistoseca gregaria (the Desert Locust)
LPA	Locustana pardalina	SPI	Schistocerca piceifrons piceiferons (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	Southwest 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)
		TPQ	Technical Program and Quality 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:

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To learn more about our activities and programs, please, visit our website:
[USAID/BHA PPM Web](#)

Additional resources on SGR and other ETOPs

SGR
USAID Pest Monitoring: [USAID/BHA PPM Web](#)
Archived ETOP Bulletins:
[\[and-food-security/pest-and-pesticide-monitoring/archive\]\(#\)](https://www.usaid.gov/what-we-do/working-crises-and-conflict/responding-times-crisis/how-we-do-it/humanitarian-sectors/agriculture-</p></div><div data-bbox=)

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/>

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

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>

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

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

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>

FAO-USAID Global Action for FAW Control
webinars <http://www.fao.org/fall-armyworm/education/webinars/en/>

FAO NURU FAW Application

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

<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-Armymworm-Evidence-Note-September-2017.pdf>

FAW management animation SAWBO

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

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>