

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

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹): The desert locust (SGR) situation remained calm during August in the Central Outbreak Region (COR). No locusts were detected during survey operations in Eritrea, Ethiopia, Oman, or Yemen. The situation remained calm in the Western outbreak region (WOR). No locusts were reported in the Eastern outbreak region (EOR).

Forecast: In COR, small-scale breeding is likely in summer breeding areas in Sudan, Eritrea, Ethiopia, and Yemen where ecological conditions have improved due to summer rains. In WOR, small-scale breeding is likely in areas that received rainfall in summer breeding areas in Mauritania, Mali, Niger, and Chad, but significant development is not expected during the forecast period. In EOR, small-scale breeding may commence in areas that received substantial amount of rainfall in Pakistan and Iran.

Red (Nomadic) Locust (*Nomadacris septemfasciata*) (NSE): Significant NSE populations were detected and treated in Ikuu plains in Tanzania. The pest remained a concern in outbreak areas in Malawi, Mozambique, and Zambia.

African Migratory Locust (*Locusta migratoria migratorioides*) (LMI - AML): LMI presence was not reported.

Malagasy locust (*Locust migrator capito*) (LMC): LMC had ended as the cold weather and dry conditions caused locusts to disperse and disappear.

Tree Locusts, *Anacridium spp.* (ASP): ASP activities were not reported during this month.

Central American Locust, *Schistocerca piceiferons* (CAL): CAL remains calm in Central America and only a few 1st generation adults were detected in some areas.

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

¹ Definitions of all acronyms and useful weblinks can be found on the last few pages of the bulletin.

Italian (CIT), Moroccan (DMA), and Asian Migratory Locusts (LMI): No update was received; however, DMA activities are expected to have ended, and CIT and LMI activities are limited.

Fall Armyworm (*Spodoptera frugiperda*, J. E. Smith) (FAW): FAW infestations were reported in Kenya and Malawi and its presence is likely elsewhere.

African Armyworm (*Spodoptera exempta*) (AAW): AAW outbreaks were not reported in the central and southern Africa.

Quelea species (QSP): QSP outbreaks were reported in Kenya, Tanzania, and Zimbabwe, the pest was causing damage to rice, wheat and barley.

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 National MoA PPDs/DPVs/PHSs, 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 (please refer to list of acronyms on the last pages). **End summary**

RÉSUMÉ

La situation du Criquet pèlerin (*Schistoseca gregaria* - SGR): La situation relative au Criquet pèlerin (SGR) est restée calme au cours du mois d'août dans la Région centrale de l'épidémie (COR). Aucun criquet n'a été détecté lors des opérations de prospection en Érythrée, en Éthiopie, à Oman ou au Yémen. La situation est restée calme dans la région occidentale de l'éclosion (WOR). Aucun Criquet pèlerin n'a été signalé dans la région orientale de la résurgence (EOR).

Prévisions: Dans le COR, une reproduction à petite échelle est probable dans les zones de reproduction estivale au Soudan, en Érythrée, en Éthiopie et au Yémen, où les conditions écologiques se sont améliorées grâce aux pluies estivales. Dans la région WOR, une reproduction à petite échelle est probable dans les zones qui ont reçu des pluies dans les zones de reproduction estivale en Mauritanie, au Mali, au Niger et au Tchad, mais aucun développement significatif n'est attendu pendant la période de prévision. Dans la région EOR, une reproduction à petite échelle peut commencer dans les zones qui ont reçu d'importantes quantités de pluie au Pakistan et en Iran.

Criquet nomade (*Nomadacris septemfasciata* - NSE): Des populations importantes de NSE ont été détectées et traitées dans les plaines d'Ikuu en Tanzanie. Le ravageur est resté préoccupant dans les zones de foyer au Malawi, au Mozambique et en Zambie.

Criquet migrateur africain (AML/LMI): La présence de LMI n'a pas été signalée.

Criquet migrateur capito, (ML/LMC): LMC avait pris fin car le temps froid et les conditions sèches avaient provoqué la dispersion et la disparition des criquets.

Le criquet arborial, *Anacridium spp*: (ASP): Les activités de l'ASP n'ont pas été signalées au cours de ce mois.

Criquet Amérique centrale (CAL): CAL reste calme en Amérique centrale et seuls quelques adultes de 1ère génération ont été détectés dans certaines zones.

Criquet d'Amérique du Sud, *Schistocerca cancellata* (SAL): Aucune mise à jour n'a été reçue au moment de la rédaction de ce bulletin et aucun développement significatif n'est attendu.

Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI): Aucune mise à jour n'a été reçue ; cependant, les activités DMA devraient avoir pris fin, et les activités CIT et LMI sont limitées.

Chenille Légionnaire d'automne (*Spodoptera frugiperda*, J. E. Smith) (FAW): Les infestations de FAW ont continué d'affecter le maïs et d'autres cultures en Éthiopie, au Kenya, au Malawi et au Zimbabwe.

Chenille Légionnaire Africaine (*Spodoptera exempta*) (AAW): Aucun foyer de AAW n'a été signalé en Afrique centrale et austral. l'agriculture.

***Quelea specis oiseaux* (QSP):** Des foyers de QSP ont été signalés au Kenya, en Tanzanie et au Zimbabwe, le ravageur causant des dégâts au riz, au blé et à l'orge.

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 MoA / 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 (se référer à la liste des acronymes sur les dernières pages). 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

During the third dekad, from 21-31 August, the Intertropical Front (ITF) moved north relative to its previous position, except on the western side, it moved south. This resulted in an overall anomalous northerly position. The western (10W-10E) portion of the ITF was located approximately at 19.9N, which was above the climatology position by 0.2 degree. The eastern (20E-35E) portion of the ITF was approximated at 17.6N, which was above the climatological position by 0.6 degree. Figure 1 displays the current position of the ITF relative to the long-term average position during the 3rd dekad of August and its previous position during the 2nd dekad of August. 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 the beginning of April 2022.

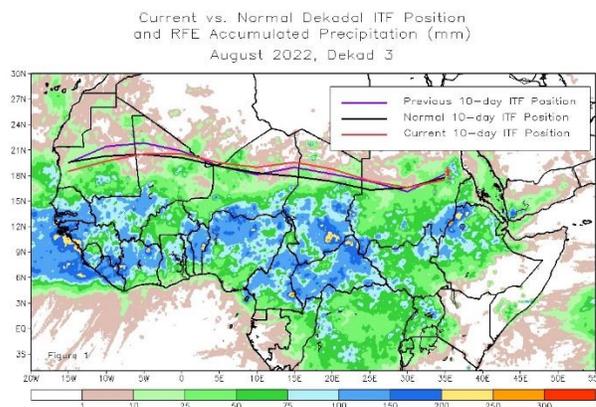
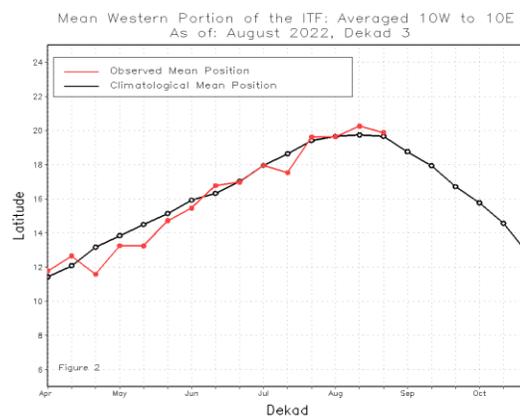
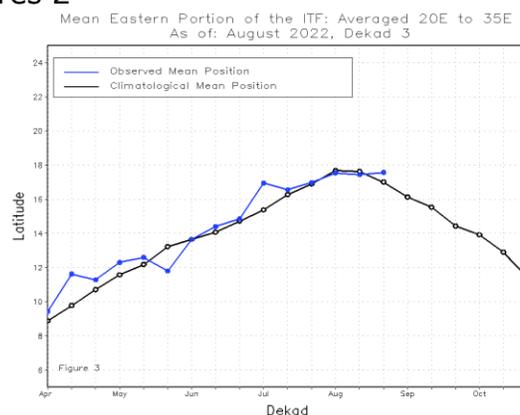
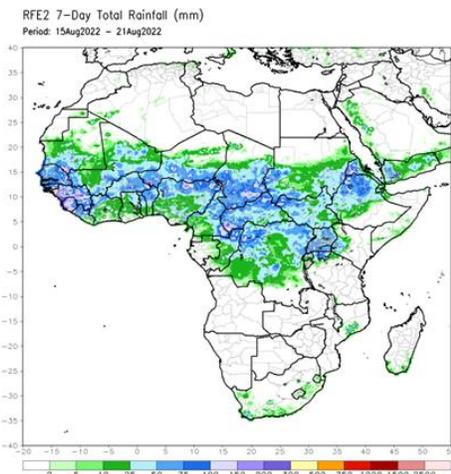


Figure 1.



Figures 2





Rainfall across Africa from 15-21 August (NOAA, 8/2022).

In **EOR**, heavy rain was reported in Pakistan during August.

Dry conditions continued in most of the **NSE** outbreak regions and only limited amount of precipitation was recorded in Mozambique during this month.

In CCA the weather condition is expected to be normal with no major anomalies in the region.

No significant weather anomalies were observed during August in locust breeding regions in Central and South America.

Detailed Accounts of Monthly ETOP Situation and Forecast for the Next Six Weeks

The **Desert Locust** (*Schistoseca gregaria* - **SGR**²): In COR, the SGR situation remained calm during August and no locusts were reported during survey operations in Ethiopia or Yemen.

Forecast: COR will remain generally calm and only limited number of locusts

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

will appear and perhaps breed in areas where ecological conditions have improved from the summer rain in Sudan, Eritrea, Ethiopia, Yemen and elsewhere during the forecast period

SGR – WOR: In WOR, ecological conditions are improving in summer breeding areas where rainfall was recorded in parts of Mali, southern and southeastern Mauritania, Niger, Chad, de Draa, Ziz et Ghri in Morocco, but locusts were not reported in those areas during this time except a few hoppers and isolated adults in Niger.

Forecast: Small-scale breeding is likely in some localities in summer breeding areas in northern Mali, southeastern Mauritania, Niger, and perhaps central eastern Chad where ecological conditions are favorable due to good precipitation, but significant development is not likely during the forecast period.

SGR - EOR: The EOR region remained calm, and no locusts were reported during July.

Forecast: Small-scale breeding is likely in areas where heavy rains were, but significant development is not likely during the forecast period.

Note: Most summer breeding areas have begun receiving normal to above-normal rains from July due to a persistent La Niña and a negative Indian Ocean Dipole that are expected to be related to high level of precipitation (FAO-DLIS). **End note.**

NOTE – Innovative Technologies for ETOP Surveillance, Early Warning and Forecasting for Stronger and Effective ETOP Management: Though at a relatively early stage for ETOP

interventions, innovative technologies, such as drones, for high-resolution images in remote and hard-to-reach inaccessible areas are being explored. On trial bases, use of drones for locust monitoring, and surgical and localized control in sensitive, and hard to reach areas showed promising results. While the range of agriculture-oriented drones may be limited for large-scale area-wide ETOP interventions, such as tackling massive swarms and hopper bands, countries and partners have expressed interests to pursue supporting work on key parameters associated these technologies, including air space access protocols and other issues. Crowd and cloud sourcing for data collection, sharing, etc. are another set of assets that can be of great value for ETOP operations. Dynamic population and biotope modeling, from CIRAD and ICIPE, respectively, and accounting for associated parameters such as soil moisture, vegetation index, etc. that involved multiple partners – USAID, Penn-FAO, NOAA, NASA, CIRAD, ICIPE, National and International Research institutions, academia, private sector, and many more will certainly contribute to better understand ETOP – DL phenology, ecology, habitat range, etc. with an ultimate goal to manage them safely and effectively. **End note.**

Red (Nomadic) Locust (NSE): Control operations were carried out by IRLCO-CSA and MinAgri in Tanzania in Ikuu plains against small swarms of NSE and an estimated 1,000 ha were treated using a DLCO-EA spray aircraft. In Mozambique, farmers and fishermen reported scattered NSE populations where vegetation burning was in progress in Buzi-Gorongosa plains.

Forecast: NSE populations are likely to persist in Lake Chilwa/Lake Chiuta plains in Malawi; Buzi-Gorongosa plains and Dimba plains in Mozambique; Kafue Flats in Zambia. Swarms may form in Lake Chilwa/Lake Chiuta plains and Buzi – Gorongosa plains as grass burning intensifies and locusts concentrate. Continued survey operations and preventive interventions remain necessary to abate any major threat from the pest. Survey operations need to be launched to determine the NSE situation in Malawi and Zambia.

African Migratory Locust (LMI - AML): LMI was not reported in the southern or central Africa regions during this month.

Forecast: LMI activities are not expected during the forecast period.

Malagasy locust (Locust migratoria capito – LMC): Dry and cold weather caused LMC to disperse and disappear.

Forecast: No LMC presence expected until the onset of the seasonal rains sometime in October-November.

Central American Locust - Schistocerca piceifrons (CAL): The CAL situation remain calm and only limited number of first generation occurred in primary breeding areas due to low precipitation.

Forecast: Mating is expected to be in progresses and limited some egg laying to occur during September and hatching in October. Limited patches of 2nd generation may occur.

[Note: CAL is a serious pest in 10 states in Mexico (Campeche, Chiapas, Hidalgo,

Oaxaca, San Luis Potosí, Tabasco, Tamaulipas, Veracruz, Quintana Roo and Yucatán - MoA/México), and in CA region, 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 (Pech, CESVY-SENASICA, Mexico)

South American Locust, *Schistocerca cancellata* (SAL) (a.k.a. Flying lobster): No update was received at the time this bulletin was compiled and significant develop is not expected.

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.

Forecast: DMA will likely end in the region; CIT will gradually subside and LMI will likely continue egg laying in Caucasus.

Fall armyworm (FAW): FAW infestations were reported in Western, Rift Valley and Central regions in Kenya; Lakeshore and Shire Valley regions in Malawi. Affected farmers carried out control with material and technical support from MinAgri. There were no reports of FAW outbreaks in Tanzania, Mozambique, Zambia, and Zimbabwe during this time; however, low incidences of the pest infestation might have occurred on irrigated maize. No update was received elsewhere at the time this bulletin was compiled; however, there is a likelihood of FAW infestation in seasonal and irrigated fields across different regions where it is established since it was first detected on the African continent in early 2016.

Forecast: FAW is likely to continue being a problem to irrigate and or seasonal crops across the globe, and continued surveillance and timely interventions remain critical to minimize any major threats/damage the pest could pose.

FAO-led Global Action for Fall Armyworm Control

NOTE: The Food and Agriculture Organization of the United Nations (FAO) is actively engaged in a transformative, coordinated Global Action for Fall Armyworm Control (GAFC) which it launched in December 2019 as an urgent response to the rapid spread of FAW. GAFC is intended to be implemented in 65 [target] countries across Africa, Near East and Asia-Pacific from 2020 to 2022: [FAW Secretariat, Global Action on FAW Control](#). GAFC is a pioneering initiative that aims to take radical, direct, and coordinated measures to fight FAW at a global level. Its 3 key objectives are: 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 closely with various partners to benefit farming communities and host-gov partners with the intention to scaling up and spreading gains across different FAW prone regions, consistent with the spirit of GAFC and host-country strategies. These initiatives build on experiences gained over the past several years, including outcomes of projects and programs supported through USAID legacy OFDA, legacy BFS, national partners, CGIARs, FAO, and several other entities.



Map of the worldwide spread of FAW since 2016 (as of 2022) (FAO-GAFC)

BHA/TPQ is working closely with various partners to benefit farming communities and host-gov partners with the intention to scaling up and spreading gains across different FAW prone regions, consistent with the spirit of GAFC and host-country strategies. These initiatives build on experiences gained over the past several years, including outcomes of projects and programs supported through USAID legacy OFDA, legacy BFS, national partners, CGIARs, FAO, and several other entities.

Note: Several species of natural enemies of FAW have been identified in Ethiopia, Kenya, Tanzania, Madagascar, India, China, and elsewhere and have been under rigorous investigations to determine their efficacy, effectiveness, environmental impacts, safety, and other relevant parameters and some have been put to use as part of an IPM approach. According to FAO’s July FAW Newsletter, a package of biological control against FAW was demonstrated in a new video from Syria and it is mentioned that *Trichogramma pretiosum*, an egg parasitoid, can be mass released to control the FAW egg populations. Bacterial insecticide, *Bacillus thuringiensis*, is sprayed four to five days

*after a *Trichogramma pretiosum* parasitoid was released to control any surviving FAW larvae. The third component in the package is a mass release of a larval parasitoid *Habrobracon hebetor* that further disrupts the life cycle of the pest (FAW). Ecologically safer alternatives are also being tried and utilized to prevent, mitigate FAW in many countries across the globe [Biocontrol on FAW Nepal](#) **End note.***

African Armyworm (Spodoptera exempta, Walker) (AAW): No AAW infestations were reported in southern and eastern Africa and no reports were received from other regions at the time this bulletin was compiled. However, limited activities may have occurred in the Horn and elsewhere during this time.

Forecast: The pest will likely continue with its presence in parts of northern Ethiopia, southern Eritrea, etc., but significant damage is not expected.

Active monitoring, reporting and timely control interventions remain critical to avert any major threat/damage to food security and livelihoods of affected communities.

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

Quelea species (QSP): Quelea birds were reported attacking rice in Morogoro region in Tanzania. In Zimbabwe, the pest was reported attacking winter wheat and barley in Mashonaland West, 2 Mashonaland Central, Mashonaland East, Matabeleland North, Matabeleland South, Masvingo and Midlands Provinces and

controlled pesticides and net trapping. In Kenya, the pest was reported damaging wheat and barley in Uasin, Gishu and Meru Counties. No update was received elsewhere at the time this bulletin was compiled, but it is likely that the pest is causing damage to small grain crops in Ethiopia, Eritrea and other countries.

Forecast: QSP infestations will likely continue being a problem to small-grain cereal growers in Tanzania, Kenya, Zimbabwe and elsewhere where irrigated or seasonal small-grain cereal crops are yet to be harvested.

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 the pest remains being a problem to pre- and post-harvest crops across regions remains a problem.

ETOP Proliferation and Climatic Factors

Note: Climate change induced weather anomalies contribute to an ecological shift in ETOP habitats, triggering risks in the outbreaks and resurgence of ETOPs and/or the emergence of new and invasive pest species. The frequency, extent and payload of ETOP prevalence, appearances, 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 presence, proliferation causing additional stresses to food security and livelihoods of 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 within a time span of 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 [Climate and ETOPs](#) End note.

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.

All ETOP front-line countries must maintain regular monitoring and surveillance as well as launch control interventions in a timely manner. Regular crop scouting is critical to avoid damage/losses. Invasion countries must also remain 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 and reports with stakeholders, including neighboring countries, and humanitarian and development partners, etc., as early and often as possible. Lead farmers, field scouts, community forecasters and others must remain vigilant and report ETOP detections to relevant authorities in their jurisdictions as quickly 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 continues its effort in strengthening national and regional capacity in ETOP prone countries across several regions. These supports for ETOPs include DRR projects on FAW in Eastern Africa, the Horn, the Red Sea region, as well as three major locust species – Moroccan locust, *Italia* locust and the Migratory locust - that continue threatening food security and livelihoods of tens of millions of people across the Caucasus and Central Asia (CCA) countries. These projects focus on strengthening surveillance, monitoring, and management of ETOPs of food security and economic importance, among others.

In Eastern Africa and the Horn, the multi-year DRR project that targets FAW is implemented under the leadership of the International Center for Insect Physiology and Ecology [ICIPE](#) in close collaboration with participating countries. In the CCA region, where more than 25 million farmers and herders are constantly affected by the three major locust species – BHA is co-funding a multi-year DRR project. The project is being implemented in close collaboration with the affected countries under the leadership of UNFAO [BHA CCA Locust Support](#).

USAID/BHA/TPQ continues with its effort in promoting the support for applied and operational research in testing, improving, and expanding innovative technologies to help minimize the impacts of ETOPs on food security and livelihoods of vulnerable people and communities across low-income countries and regions and encourages collaboration among countries and potential partners. Through these efforts, spread of the ETOPs among and between countries can be minimized.

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 overhauled. FAO is implementing an updated version of the PSMS with a more user-friendly diligent mode. Thanks to the system, SGR frontline countries and others have been able to effectively manage their strategic [pesticide] stocks and avoid accumulations of unnecessary and toxic stockpiles as well as empty pesticide containers that pose a serious threat to the human health, the environment and non-target and beneficial organisms.

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, the Agency policies and procedures, to help minimize health risks and environmental pollution associated with misuse and mismanagement of pesticides and pesticide containers, improve safer and effective pest control interventions. An informed procurement and use as well as judiciously executed triangulations of surplus stocks between countries is worth considering.

Inventory of Strategic Pesticide Stocks for SGR Control

During July, strategic pesticide stocks (SPS) for SGR remained unchanged in all countries for which monthly updates have been available and a similar situation is expected in others as well.

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, 43,181~
Eritrea	10,750~
Ethiopia	110,113~
Libya	24,930~
Kenya	?
Madagascar	9,335~+
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	95,000~
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	
+ = other MoA stocks are not included	
? = data not available	
GM = <i>GreenMuscle</i> 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)
- AML African Migratory (*Locusta migratoria migratorioides*)
- 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 (USAID)
- CABI Center for Agriculture and Biosciences International
- CAL Central American Locust *Schistocerca piceifrons piceiferons*
- CBAMFEW Community-based armyworm monitoring, forecasting and early warning
- CCA Caucasus and Central Asia
- CERF Central Emergency Response Fund
- CIT *Calliptamus italicus* (Italian Locust)
- CLCPRO Commission de Lutte Contre le Criquet Pèlerin 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	ITF	Inter-Tropical Convergence Front = ITCZ)
CTE	<i>Chortoicetes terminifera</i> (Australian plague locust)	FAO-DLIS	Food and Agriculture Organizations' Desert Locust Information Service
DDLC	Department of Desert Locust Control	Hoppers	young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)
DLCO-EA	Desert Locust Control Organization for Eastern Africa	JTWC	Joint Typhoon Warning Center
DLMCC	Desert Locust Monitoring and Control Center, Yemen	Kg	Kilogram (~2.2 pound)
DMA	<i>Dociostaurus maroccanus</i> (Moroccan Locust)	L	Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)
DPPQS	Department of Plant Protection and Quarantine Services, India	LCC	Locust Control Center, Oman
DPV	Département Protection des Végétaux (Department of Plant Protection)	LPA	<i>Locustana pardalina</i>
ELO	EMPRES Liaison Officers –	LMC/ML	<i>Locusta migratoriacapito</i> (Malagasy locust)
EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases	MoAFSC	Ministry of Agriculture, Food Security and Cooperatives
EOR	Eastern SGR Outbreak Region	MoAI	Ministry of Agriculture and Irrigation
ETOP	Emergency Transboundary Outbreak Pests	MoARD	Ministry of Agriculture and Rural Development
FAW	<i>Spodoptera frugiperda</i> (SFR) (Fall armyworm (FAW))	NALC	National Agency for Locust Control
Fledgling	immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully developed reproductive organs to breed	NCDLC	National Center for the Desert Locust Control, Libya
GM	GreenMuscle® (a fungal-based biopesticide); NOVACRID, Green Guard	NOAA (US)	National Oceanic and Aeronautic Administration
ha	hectare (= 10,000 sq. meters, about 2.471 acres)	NPS	National Park Services
ICAPC	IGAD's Climate Prediction and Application Center	NSD	Republic of North Sudan
IGAD	Intergovernmental Authority on Development (Horn of Africa)	NSE	<i>Nomadacris septemfasciata</i> (Red Locust)
IRIN	Integrated Regional Information Networks	OFDA	Office of U.S. Foreign Disaster Assistance
IRLCO-CSA	International Red Locust Control Organization for Central and Southern Africa	PBB	Pine Bark Beetle (<i>Dendroctonus</i> sp. – true weevils)
ITCZ	Inter-Tropical Convergence Zone	PHD	Plant Health Directorate
		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	<i>Quelea</i> species (Red Billed <i>Quelea</i> bird, etc.)
		SAL	South American (Locust <i>Schistocerca cancellata</i>)

SARCOF *Southern Africa Region
Climate Outlook Forum*

SGR *Schistoseca gregaria (the Desert
Locust)*

SSD *Republic of South Sudan*

SPB *Southern Pine Beetle
(Dendroctonus frontalis) – true
weevils*

SWAC *Southwest Asia DL Commission*

PBB *Pine Bark Beetle*

PHS *Plant Health Services*

PSPM *Preparedness, Strategic Planning
and Mitigation (formerly known as
Technical Assistance Group - TAG)*

TPQ *Technical Program 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*

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

Additional resources on ETOPs

USAID/BHA Pest and Pesticide Monitoring
and ETOP Bulletins: [USAID/BHA PPM](#)

USAID/BHA Archived ETOP Bulletins
[Archived ETOP Bulletins](#)

USAID Pest Management Guidelines
[USAID PM Guidelines](#)

[IPM](#)

[US EPA IPM](#)

SGR:

UN/FAO Desert Locust (SGR) Watch [FAO
Desert Locust Watch](#)

FAO Locust Hub [SGR HUB](#)

FAO Locust Emergency Appeal for Greater
Horn of Africa and Yemen [SGR Appeal for
GHA and Yemen](#)

FAO Desert Locust Crisis [SGR Crisis](#)

The Desert Locust Control Organization
for Eastern Africa [DLCO-EA](#)

FAO/Central Region Commission for the
SGR Control [SGR CRC](#)

FAO/Western Region Commission for SGR
Control [SGR CLCPRO](#)

FAO SGR Response Overview Dashboard
[FAO SGR Dashboard](#)

IGAD Climate Predication and Application Centres [ICPAC Climate SGR](#)

CCA Locusts:

FAO Locust Watch – Caucasus and Central Asia [CAC Locust Watch](#)

USAID/BHA supports for locust operations in the CCA Region [BHA CCA Locust Support](#)

FAW:

USAID FtF FAW [USAID FAW](#)
CABI on Invasive species [Invasive Species Compendium](#)

USAID FAW PEA/PERSUAP [FAW PERSUAP](#)

FAO FAW Monitoring and Early warning System [FAW EW&M](#)

FAO-USAID Global Action for FAW Control webinars [GAFC](#)

FAO NURU FAW Application [Nuru the talking app for FAW](#)

[CABI on FAW](#)

FAW management animation SAWBO [FAW Management Animation](#)

[FAW GAFC Map 2022](#)

AAW:

[Armyworm](#)

Famine Early Warning System Network [FEWS NET](#)

NOAA Climate Prediction Center [NOAA CPC](#)