

**Global Emergency Transboundary Outbreak Pest (GETOP) Situation
Bulletin for June with a forecast through mid-August 2023**
résumé en français est inclus

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹): The SGR situation remained generally calm during June in the Central SGR Outbreak Region (COR), and only some groups of adults and hopper and bands were reported on the Red Sea coast and the interior in Saudi Arabia (19,735 ha treated) and the Red Sea coast in Eritrea, and southeastern Egypt (396 ha treated). A few isolated adults were detected in the interior and the Red Sea coast of Yemen and scattered adults were observed in northeast coast of Oman. No locusts were reported in Djibouti, Ethiopia, Somalia or elsewhere in COR during this month. In the Western SGR Outbreak Region (WOR), control operations were conducted on 798 ha against immature and mature transiens adults and hoppers in the agricultural areas in Adrar, Aoulef, Zoulef and Beni Abbes in Algeria. Groups of adults were treated on 523 ha in Morocco and small groups that crossed from the north were treated on 62 ha in Mauritania. Isolated mature adults were detected at one location in Rajasthan, India.

Forecast: In COR, higher temperature and unfavorable ecological conditions will cause locust numbers to decrease in the Red Sea coast and interior of Saudi Arabia. Limited breeding may occur in areas where ecological conditions remain favorable in the interior and Red Sea coast of Yemen. The western lowlands in the interior of Sudan may experience locust appearance. Isolated adults will likely remain in the southern Nile Valley in Egypt. In EOR, drier than normal ecological condition is expected along both sides of the Indo-Pakistan border, however, some breeding may occur in July near southeast Pakistan and southern Rajasthan, India due to favorable ecological conditions resulting from Cyclone Biparjoy that made landfall in mid-June.

Red (Nomadic) Locust (*Nomadacris septemfasciata*) (NSE): No update was received at, but limited activities are likely to have continued in the primary outbreak areas in Malawi, Mozambique, Tanzania, and Zambia.

African Migratory Locust (*Locusta migratoria migratorioides*) (LMI - AML): No activities were reported during this month.

Malagasy locust (*Locust migrator capito*) (LMC): No update was received during this month and activities are expected.

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

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

Central American Locust, *Schistocerca piceiferons* (CAL): No update was received, and the CAL situation remained generally calm in Mexico and Central America.

South American Locust, *Schistocerca cancellata* (SAL): No update was received, and no activities are expected.

Italian (CIT), Moroccan (DMA), and Asian Migratory Locusts (LMI): CIT and DMA continued appearing in the Central Asian and/or Caucous countries.

Fall Armyworm (*Spodoptera frugiperda*, J. E. Smith) (FAW): FAW infestations were reported in Ethiopia, Eritrea, Kenya, Tanzania and Uganda and control operations were launched in most of the affected areas.

African Armyworm (*Spodoptera exempta*) (AAW): AAW infestations were reported in northern Ethiopia.

Quelea species (QSP): QSP outbreaks were reported in SNNPR, Ethiopia and Morogoro, Singida and Mbeya Regions of Tanzania.

Active ETOP surveillance, monitoring, information sharing, and executing timely preventive interventions remain critical to abate the threats GETOPs pose to food security and livelihoods of vulnerable people and communities.

USAID/BHA/TPQ regularly monitors GETOPs 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, research centers, academia, private sector, civil societies, NGOs and others, and compiles and issues monthly analytical GETOP Bulletins (please refer to list of acronyms on the last few pages). **End summary**

RÉSUMÉ EN FRANÇAIS

La situation du Criquet pèlerin (*Schistocerca gregaria* SGR): La situation de la SGR est restée généralement calme en juin dans la région centrale de l'épidémie de SGR (COR), et seuls quelques groupes d'ailés, de larves et de bandes ont été signalés sur la côte de la mer Rouge et l'intérieur de l'Arabie saoudite (19 735 ha traités) et la mer Rouge. côte en Erythrée, et le sud-est de l'Egypte (396 ha traités). Quelques ailés isolés ont été détectés dans l'intérieur et sur la côte de la mer Rouge au Yémen et des ailés épars ont été observés sur la côte nord-est

d'Oman. Aucun criquet n'a été signalé à Djibouti, en Éthiopie, en Somalie ou ailleurs dans la République de Corée au cours de ce mois. Dans la Western SGR Outbreak Region (WOR), des opérations de lutte ont été menées sur 798 ha contre des ailés transiens immatures et matures et des larves dans les zones agricoles d'Adrar, Aoulef, Zoulef et Beni Abbas en Algérie. Des groupes d'ailés ont été traités sur 523 ha au Maroc et de petits groupes qui ont traversé depuis le nord ont été traités sur 62 ha en Mauritanie. Des ailés matures isolés ont été détectés dans un site du Rajasthan, en Inde.

Prévisions: Dans le COR, des températures plus élevées et des conditions écologiques défavorables entraîneront une diminution des effectifs acridiens sur la côte de la mer Rouge et à l'intérieur de l'Arabie saoudite. Une reproduction limitée peut avoir lieu dans les zones où les conditions écologiques restent favorables à l'intérieur et sur la côte de la mer Rouge du Yémen. Les basses terres occidentales à l'intérieur du Soudan peuvent connaître l'apparition de criquets. Des ailés isolés resteront probablement dans le sud de la vallée du Nil en Égypte. Dans l'EOR, des conditions écologiques plus sèches que la normale sont attendues des deux côtés de la frontière indo-pakistanaise, cependant, une certaine reproduction pourrait avoir lieu en juillet près du sud-est du Pakistan et du sud du Rajasthan, en Inde, en raison des conditions écologiques favorables résultant du cyclone Biparjoy qui a touché terre au milieu -Juin.

Criquet nomade (*Nomadacris septemfasciata* - NSE): Aucune mise à jour n'a été reçue, mais des activités limitées se sont probablement poursuivies dans les principales zones de foyer au Malawi, au Mozambique, en Tanzanie et en Zambie.

Criquet migrateur africain (AML/LMI): migratorioides) (LMI – AML): Aucune activité n'a été signalée au cours de ce mois.

Criquet migrateur capito, (LMC): Aucune mise à jour n'a été reçue au cours de ce mois et des activités sont attendues.

Le criquet arborial, *Anacridium spp*: (ASP): Aucune activité ASP n'a été signalée.

Criquet Amérique centrale (CAL): La situation CAL reste calme au Mexique et en Amérique centrale.

Criquet d'Amérique du Sud, *Schistocerca cancellata* (SAL): Aucune mise à jour n'a été reçue et aucune activité n'est prévue.

Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI): Le CIT et le DMA ont continué à apparaître dans les pays d'Asie centrale et/ou du Caucase.

Chenille Légionnaire d'automne (*Spodoptera frugiperda*, J. E. Smith) (FAW): Des infestations de légionnaire d'automne ont été signalées en Éthiopie, en Érythrée, au Kenya, en Tanzanie et en Ouganda et des opérations de lutte ont été lancées dans la plupart des zones touchées.

Chenille Légionnaire Africaine (*Spodoptera exempta*) (AAW): Des infestations d'AAW ont été signalées dans le nord de l'Éthiopie.

Quelea specis oiseaux (QSP): Des foyers de QSP ont été signalés dans le SNNPR, en Éthiopie et dans les régions de Morogoro, Singida et Mbeya en Tanzanie.

La surveillance active des ETOP, le suivi, le partage d'informations et l'exécution d'interventions préventives en temps opportun restent essentiels pour réduire les menaces que les GETOP font peser sur la sécurité alimentaire et les moyens de subsistance des personnes et des communautés vulnérables.

USAID / BHA / TPQ surveille régulièrement les GETOP en étroite collaboration avec son réseau mondial de PPD/DPV/PHS nationaux du MoA, les entités régionales et internationales de surveillance et de contrôle des ravageurs, la FAO, la CLCPRO, le CRC, la DLCO-EA et l'IRLCO-CSA, les centres de recherche, le milieu universitaire, le secteur privé, la société civile, les ONG et autres, et compile et publie des bulletins analytiques mensuels GETOP (veuillez vous référer à la liste des acronymes sur les dernières pages). Fin du résumé

Note: All GETOP Bulletins can be accessed here: [USAID Pest and Pesticide Monitoring](#)

Additional GETOP resources can be found on the last pages.

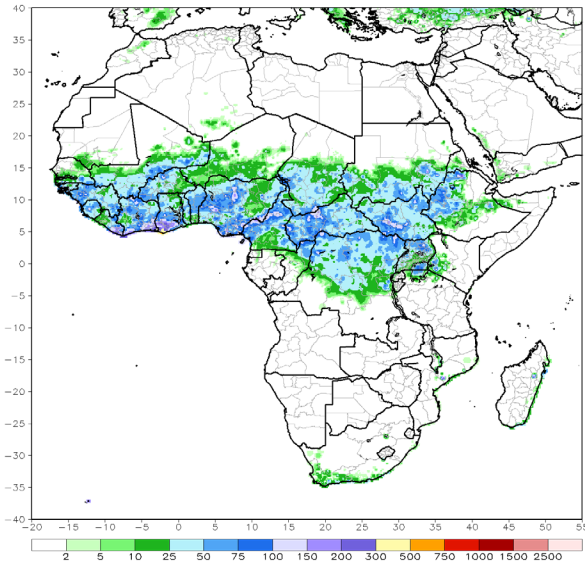
Weather and Ecological Conditions

During the 3rd dekad of June from 21-26 June, in East Africa, rainfall was above-average over southern and eastern Sudan, pockets of Ethiopia, and portions of South Sudan and Uganda. In Central Africa, rainfall was above-average over

western and northern Cameroon, northern Congo, western CAR, and parts of central and northern DRC. Below-average rainfall was observed over pockets of central Cameroon, central In West Africa, above-average rainfall was observed over western Guinea, Sierra Leone, eastern Liberia, Cote d'Ivoire, western and northern Burkina Faso, southern Ghana, southeastern Mali, northern Benin, and central and southern Nigeria. Rainfall was below-average over western Mali, parts of eastern Guinea, eastern Burkina Faso, southern Benin, and parts of northern and eastern

Nigeria, Congo, and eastern CAR.

RFE2 7-Day Total Rainfall (mm)
Period: 19Jun2023 - 25Jun2023



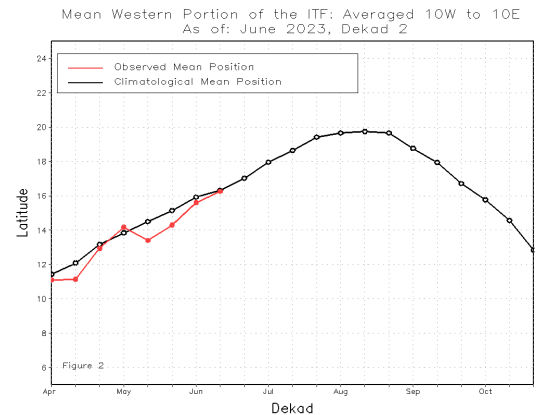
The Week-1 outlook calls for above-normal rainfall over Guinea, southern Mali, southeastern Nigeria, southern Cameroon, northern Congo, northern DRC, parts of southern Sudan and northern South Sudan, western and central Ethiopia, and southern South Africa. In contrast, there is an increased chance for below-normal rainfall over much of Cote d'Ivoire, southern Burkina Faso, Ghana, Togo Benin, northern Nigeria, southern Niger, northern Cameroon, southern Chad, northern CAR and northeastern Ethiopia.

For week-2, there is an increased chance for above-normal rainfall over eastern Nigeria, Cameroon, southern CAR, northern DRC, southwestern South Sudan and western Ethiopia. In contrast, there is an increased chance for below-normal rainfall over much of Liberia and northwestern Cote d'Ivoire.

From June 11-20, the Intertropical Front (ITF) moved north (south) relative to the western (eastern) side of the previous position. The western (10W-10E) portion

of the ITF was located approximately at 16.3N, which was the same as the climatological position. Also, at the eastern (20E-35E) portion, the ITF was approximated at 15.6N, which was much above the long-term average position by 1.5 degrees. Figure 1 above displays the current position of the ITF relative to the climatological position during the 2nd dekad of June and its previous position during the 1st dekad of June. Figures 2 and 3 are time series, illustrating the latitudinal positions for the western and eastern portions of the ITF, respectively, and their seasonal evolutions since the beginning of April 2023 (NOAA).

Figure 2.

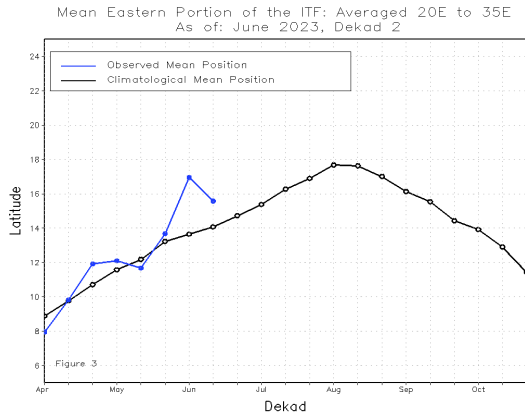


During the 2nd week of June, in East Africa, rainfall was above-average over western Ethiopia, Eritrea, parts of southern Sudan, eastern South Sudan, and many parts of Uganda. Below-average rainfall was observed over parts of western and central South Sudan. In Central Africa, rainfall was above-average over northern Congo, and pockets of DRC. Below-average rainfall was observed over pockets of Cameroon.

In West Africa, above-average rainfall was observed over eastern Senegal, portions of Guinea, Sierra Leone, western and southern Mali, western Burkina Faso, eastern Niger, and southern Nigeria. Rainfall was below-average over much of

Liberia, Cote d’Ivoire, and parts of southern Ghana. In Southern Africa, above-average rainfall was observed over the far southern South Africa.

Figure 3.



NSE outbreak regions received low (9-13 mm in Mozambique), traces (Tanzania) or no precipitation (Malawi, Zambia, Zimbabwe, etc.) during May.

Weather prediction for Central Asia and the Caucasus region: Much of Central Asia remained largely dry. According to the CPC Unified Gauge Analysis, northwestern and north-central Kazakhstan, eastern and western Kyrgyzstan, eastern and central Tajikistan, eastern Afghanistan, northwestern Iran, and central and northern Pakistan observed light to moderate precipitation up to 50 mm from 13 – 19 June 2023. The northeastern portion of the Punjab region of Pakistan observed up to 100 mm of rainfall, and the southern portion of the Sindh region observed up to 150 mm of rainfall due to Tropical Cyclone Biparjoy. Because of the continuing prolonged precipitation deficits and degrading vegetation conditions, an abnormal dryness covers western and northern Afghanistan, southern and eastern Turkmenistan, eastern and central Uzbekistan, western and northern

Tajikistan, Kyrgyzstan, and north-central, northeastern, south-central, and southeastern Kazakhstan. Eastern Turkmenistan, central Kyrgyzstan, and parts of southeastern Kazakhstan remain dry. Northern and eastern Kazakhstan, northern, eastern, and southern Kyrgyzstan, northeastern Tajikistan, eastern Afghanistan, and parts of northern and central Pakistan are expected to receive light to moderate (10-50 mm) precipitation. The northern Punjab (including Islamabad) and central Khyber Pakhtunkhwa regions of Pakistan may observe precipitation around 50 mm in a 24-hour period and 7-day accumulations between 50-100 mm with prediction of flooding in this region. Below normal precipitation is expected across much of eastern Kazakhstan, Kyrgyzstan, eastern and northern Tajikistan, and northeastern Afghanistan, a situation making it unfavorable for locust development [Climate Prediction Center CA \(NOAA\)](#).

Moderate rainfall was observed in Georgia, Caucus region during June.

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

The **Desert Locust** (*Schistoseca gregaria* - **SGR²**): In COR, groups of adults and hoppers and bands were reported on the Red Sea coast (RS) and the interior of Saudi Arabia and controlled on 19,735 ha. Scattered hoppers and adults were also detected on the RS coast in Eritrea and southeast RS coast and the Nile Valley in Egypt and treated on 396 ha. In Yemen, surveys continued in summer breeding areas in the interior of Al-Jawf, Marib governorates and parts of the

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

western highlands southeast of Sana'a and a few isolated adults were detected in the interior and the RS coast. A few isolated immatures and mature solitary adults were detected near the northeast coast of Oman. The situation remained calm in Djibouti, Ethiopia, Somalia and elsewhere in the region during this month.

Forecast: In COR, adult groups will decrease in the RS coast and interior of Saudi Arabia due to temperature rise and unfavorable ecological. Limited breeding may occur in the interior and the RS coast of Yemen. Isolated adults may remain near the southern Nile Valley in Egypt and some locusts may appear in the western lowlands in the interior of Sudan. In Yemen, adults may appear on the RS coast and small-scale breeding may occur in the interior. The situation will remain calm elsewhere in the COR during the forecast period.

SGR – WOR: The WOR, immature and mature transiens adults and L2-L5 instar hoppers and groups were detected in the agricultural areas in Adrar, Aoulef, Zoulef and Beni Abbes in Algeria and controlled in 798 ha. In Morocco, groups of adults were controlled on 523 ha south of the Atlas Mountains and the western part of the country. In Mauritania, small groups from the North crossed the border and were controlled on 62 ha.

In Mali, ecological and meteorological conditions remained unfavorable for SGR to develop and reproduce in the outbreak areas, and no locusts were reported in the country during this month.

In Niger, rainfall was recorded in the southern strip and some localities in Aïr and Tamesna, but ecological conditions remained generally unfavorable, and no locusts were reported in June in the

summer breeding and gregarization areas.

In Chad, ecological conditions are beginning to improve in some gregarization zones in the southern part of the country where rainfall was recorded earlier, however the SGR situation remains calm. No SGR was reported in Tunisia.

Forecast: In WOR, a few escapee adults from northwestern Africa will likely move southward into southern Algeria, northern Mauritania and perhaps northern Mali, and Niger where they will likely disperse. Small-scale breeding may occur in areas where ecological conditions may have begun improving (e.g., Chad, southern Mauritania, northern Mali, Niger and perhaps in southern Algeria) but significant development is unlikely during the forecast period in region.

SGR - EOR: Isolated mature adults were detected at one location in Rajasthan, India during June.

Forecast: Although drier than normal condition is expected along both sides of the Indo-Pakistan border, some breeding may occur in July near southeast Pakistan and southern Rajasthan, India due to Cyclone Biparjoy that made landfall in mid-June.

NOTE – Advanced Technologies for GETOP Surveillance, Early Warning and Forecasting Enhance Effective GETOP Management: *Though at a relatively early stage for large-scale 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 controlling massive swarms and hopper bands, countries and partners have expressed interests to pursue supporting work on key parameters associated with these technologies, including permitting protocols for air space access 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): No update was received at the time this Bulletin was compiled, but NSE activities are likely to have continued declining in the primary outbreak areas in Malawi, Mozambique, Tanzania, and Zambia.

Forecast: With the ending of the rainy season and vegetation drying out coupled with the seasonal vegetation burning, limited numbers of NSE are expected concentrating in patches of green vegetation and forming small swarms that could migrate to cropping and pastoral areas.

Adequate resources remain critical to enable IRLCO-CSA and NPPD to undertake timely surveillance and monitoring and launch preventive interventions to curtail the development of significant locust populations that could cause severe damage to crop and pasture.

African Migratory Locust (LMI): No update was received during this month, and cool and dry weather likely impacted any activities.

Malagasy locust (Locust migratoria capito – LMC): LMC activities were not reported during this month.

Central American Locust - Schistocerca piceifrons (CAL): No reports were received, and CAL likely remained generally calm. Some activities may occur contingent upon favorable ecological conditions.

[**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.

Italian (CIT), Moroccan (DMA) and Migratory (LMI) DMA and CIT activities continued in CCA, and control operations are in progress.

Forecast: CIT and DMA activities will continue in different places in the region.

Fall armyworm (FAW): FAW infestations were reported on maize crop in Ethiopia (Amhara and Oromia Administrative regions) where cultural and chemical control operations were launched. The pest was also reported attacking maize in northeastern Tanzania, southern Eritrea, several parts of Kenya, and Uganda. It is likely that the pest is present in other countries where maize is under irrigation and/or in season.

Forecast: FAW will likely continue being a problem to irrigated and in season maize crop across the globe.

Continued surveillance, monitoring, early warning, and timely preventive interventions remain critical to minimize major damage and/or threats of the pest to crops and pasture.

FAW has become a new resident pest in several countries across the globe outside its land of origin, the Americas, since its first appearance outside its original habitat in 2016 and continues posing threats and damages to fields and irrigated crops.

FAO-led Global Action for Fall Armyworm Control

NOTE: The Food and Agriculture Organization of the United Nations (FAO) and CIT 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 three 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 collaborating 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 are built 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.

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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 in 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 presented 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): Infestations of AAW were reported in Amhara and Tigray administrative regions in Ethiopia where 76,996 ha of sorghum, maize, teff, wheat and grazing land were reported affected and cultural and chemical control operations were carried out on 46,825 ha (14,901 ha cultural and 31,154 ha chemical).

Forecast: The AAW will continue its northward migration reaching Eritrea, etc., during the forecast period.

Active surveillance and monitoring remain critical to forecast and report pest presence to plan timely control interventions. Trap management and scouting remain critical to determine population levels and forecasting.

It is to be recalled that USAID legacy OFDA through DLCO-EA and host-country partners sponsored a project in East Africa and the host-countries and launched training farmers and technical staff in AAW identification, detection, monitoring, surveillance, trap operations and management, reporting as well as control operations.

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 outbreaks were reported in Morogoro, Singida and Mbeya Regions of Tanzania where aerial operations controlled the pest (500 ha). In Ethiopia, limited QSP infestation was reported in SNNPR, but did not necessitate control operations.

Forecast: QSP outbreaks are likely to continue being a problem to small grain cereals in field and irrigated crops across QSP prone regions.

Routine surveillance, monitoring, reporting, and timely preventive control interventions remain critical to minimize the need for significant resources to launch curative control operations and contribute to food security and livelihoods of affected farming communities.

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 on rodents during this month, but the pest remains to be a perennial problem to pre- and post-harvest crops across various regions.

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 End note; Scientific review of the impact of climate change on plant pests – A global challenge to prevent and mitigate plant pest risks in agriculture, forestry, and ecosystems. Rome. FAO on behalf of the IPPC Secretariat.

<https://www.fao.org/documents/card/en/c/cb4769en>.

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 community-based FAW monitoring forecasting and early warning continues in five countries (Ethiopia, Malawi, Rwanda, Uganda and Zambia) under the auspice 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 under the leadership of UNFAO in close collaboration with the affected countries in the region [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 digital 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 and effective SPS can be established by linking 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 is worth considering.

Inventory of Strategic Pesticide Stocks for SGR Control

During June, SGR strategic pesticide stocks were reduced by 21,514 lt (Algeria 798 ha, Morocco 523 ha, Mauritania 62 ha, Egypt 396 ha, Saudi Arabia 19,735 ha).

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

Country	Quantity, l/kg
Algeria	1,184,761~
Chad	65,270~
Egypt	9,857 ULV, 43,111~
Eritrea	10,750~
Ethiopia	56,200
Libya	24,930~
Kenya	?
Madagascar	9,335~+
Mali	240~ biopesticides
Mauritania	31,759 + 316.5kg ^{GM}
Morocco	3,375,156, ^D
~Niger	62,000
Oman	5,000~
Saudi Arabia	21,224~; - 20,131 l
Senegal	156,000~
Somalia	?
Sudan	94,870~
South Sudan	?
Tunisia	62,200 ^{OB} +200 ^{OBML} +1,025 ^{LV}
Uganda	?
Yemen	10,000; 180kg ^{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} = *GreenMuscle*TM (fungal-based - *Metarhizium acridum* - biological pesticide, e.g., NOVACRID)

^{OB} = obsolete

^{ML} = malathion

^{LV} = Larvos

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 (Locust *Locusta migratoria migratorioides*)

APLC Australian Plague Locust Commission

APLC Australian Plague Locust Commission

Bands groups of hoppers marching 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

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	JTWC	Joint Typhoon Warning Center
DMA	<i>Dociostaurus maroccanus</i> (Moroccan Locust)	Kg	Kilogram (~2.2 pound)
DPPQS	Department of Plant Protection and Quarantine Services, India	L	Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)
DPV	Département Protection des Végétaux (Department of Plant Protection)	LCC	Locust Control Center, Oman
ELO	EMPRES Liaison Officers –	LPA	<i>Locustana pardalina</i>
EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases	LMC/ML	<i>Locusta migratoriacapito</i> (Malagasy locust)
EOR	Eastern SGR Outbreak Region	Metrihizium	<i>acridum</i> (a fungal entomopathogen used for locust and grasshopper control, e.g., NOVACRID (Benin isolate; Green Muscle (Niger and CIRO isolates); The entomopathogen was formerly named <i>M. anisopliae</i> var <i>acridum</i> and before that it was referred to as <i>M. flavoveridea</i> and <i>Metarhizium</i> sp.)
ETOP	Emergency Transboundary Outbreak Pests	MoAFSC	Ministry of Agriculture, Food Security and Cooperatives
FAW	<i>Spodoptera frugiperda</i> (SFR) (Fall armyworm (FAW))	MoAI	Ministry of Agriculture and Irrigation
Fledgling	immature adult locust /grasshopper that has the same phenology as mature adults, but lacks fully developed reproductive organs to breed	MoARD	Ministry of Agriculture and Rural Development
GM	GreenMuscle® (a <i>Metarhizium</i> fungal-based biopesticide); NOVACRID, Green Guard	NALC	National Agency for Locust Control
ha	hectare (= 10,000 sq. meters, about 2.471 acres)	NCDLC	National Center for the Desert Locust Control, Libya
ICAPC	IGAD's Climate Prediction and Application Center	NOAA (US)	National Oceanic and Aeronautic Administration
IGAD	Intergovernmental Authority on Development (Horn of Africa)	NPS	National Park Services
IRIN	Integrated Regional Information Networks	NSD	Republic of North Sudan
IRLCO-CSA	International Red Locust Control Organization for Central and Southern Africa	NSE	<i>Nomadacris septemfasciata</i> (Red Locust)
ITCZ	Inter-Tropical Convergence Zone	OFDA	Office of U.S. Foreign Disaster Assistance
ITF	Inter-Tropical Convergence Front = ITCZ)	PBB	Pine Bark Beetle (<i>Dendroctonus</i> sp.: Curculionidae – true weevils)
FAO-DLIS	Food and Agriculture Organizations' Desert Locust Information Service	PHD	Plant Health Directorate
Hoppers	young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)	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 *Schistocerca cancellata*)

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 and Program Quality

Triangulation Transfer of donated pesticides from countries with large inventories with no immediate need for use to countries with immediate need through a third party 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 has emerged as a relatively new, dry season pest, largely associated with the destruction of its natural habitat from deforestation, land clearing for agricultural and other development efforts and climate anomalies.

Point of Contact:

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

Additional resources on GETOPs

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

USAID Pest Management Guidelines

[USAID PMG](#)

[US EPA IPM](#)

SGR:

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

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](#)

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 Prediction 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](#)