

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

## SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**<sup>1</sup>): The desert locust (SGR) situation remained calm during July in the Central Outbreak Region (COR). Only a few solitary adults and hoppers were detected in a few places in summer breeding areas in Sudan. No locusts were detected during survey operations in Eritrea, Ethiopia, Oman, or Yemen. No locusts were detected in summer breeding areas 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 and Yemen and perhaps Oman. In WOR, small-scale breeding is likely in summer breeding areas in Mauritania, Mali, Niger, and Chad in areas of seasonal precipitation, but significant development is not expected during the forecast period. In EOR, small-scale breeding may commence in Iran where substantial amount of rainfall was reported. The Indo-Pakistan borders may also experience limited presence of SGR at the foothills of the monsoon rains, but significant developments are not expected.

**Red (Nomadic) Locust** (*Nomadacris septemfasciata*) (NSE): Significant NSE populations were detected in Ikuu plains in Tanzania and 2,500 ha were targeted for control operations. The pest remained a concern in Chilwa/Lake Chiuta plains, Mpatsanjoka Dambo in Malawi; Buzi Gorongosa and Dimba plains in Mozambique and Kafue Flats in Zambia.

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

**Malagasy locust** (*Locust migratoria capito*) (LMC): LMC situation has wound down 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.

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

**Central American Locust**, *Schistocerca piceiferons* (CAL): CAL remains calm in Central America and only a few solitary hoppers and transient populations were detected in Guatemala.

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

**Italian (CIT), Moroccan (DMA), and Asian Migratory Locusts (LMI)**: DMA activities have come to an end in the southern region of the CCA but continued in Caucasus and northern CA countries. CIT and LMI continued hatching, hopper formations and fledging in different countries.

**Fall Armyworm** (*Spodoptera frugiperda*, J. E. Smith) (FAW): FAW infestations continued affecting maize and other crops in Ethiopia, Kenya, Malawi, and Zimbabwe.

**African Armyworm** (*Spodoptera exempta*) (AAW): AAW outbreaks were reported Eritrea, Ethiopia, and Kenya where control operations were carried out by the affected farmers in collaboration with the MoAs.

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

*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 en juillet dans la région centrale de l'épidémie (COR). Seuls quelques ailés solitaires et larves ont été détectés dans quelques sites des zones de reproduction estivale du Soudan. Aucun criquet n'a été détecté lors des opérations de prospection en Érythrée, en Éthiopie, à Oman ou au Yémen. Aucun criquet n'a été détecté dans les zones de reproduction

estivale de la région ouest de la résurgence (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 et au Yémen et peut-être à Oman. Dans la région WOR, une reproduction à petite échelle est probable dans les zones de reproduction estivale en Mauritanie, au Mali, au Niger et au Tchad dans les zones de précipitations saisonnières, mais aucun développement significatif n'est attendu pendant la période de prévision. Dans la région EOR, une reproduction à petite échelle peut commencer en Iran où des précipitations substantielles ont été signalées. Les frontières indo-pakistanaïses peuvent également connaître une présence limitée de SGR au pied des pluies de mousson, mais des développements significatifs ne sont pas attendus.

**Criquet nomade (*Nomadacris septemfasciata* - NSE):** Des populations importantes de NSE ont été détectées dans les plaines d'Ikuu en Tanzanie et 2 500 ha ont été ciblés pour des opérations de lutte. Le ravageur est resté une préoccupation dans les plaines de Chilwa/lac Chiuta, Mpatsanjoka Dambo au Malawi ; Buzi Gorongosa et plaines de Dimba au Mozambique et Kafue Flats en Zambie.

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

**Criquet migrateur capito, (ML/LMC):** A Madagascar, les opérations de prospection et de lutte aériennes et terrestres se sont poursuivies contre le LMC (et la NSE).

**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 seules quelques populations transitoires de larves solitaires ont été détectées au Guatemala.

**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):** Les activités DMA ont pris fin dans la région sud de le CCA mais se sont

poursuivies dans les pays du Caucase et du nord de l'AC. CIT et LMI ont continué d'éclorre, de former des larves et d'envoler dans différents pays.

**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): Des foyers d'AAW ont été signalés en Érythrée, en Éthiopie et au Kenya, où des opérations de lutte ont été menées par les agriculteurs touchés en collaboration avec les Ministères de l'agriculture.

***Quelea speciosissima* (QSP)**: Des foyers de QSP ont été signalés au Kenya, en Tanzanie et au Zimbabwe, le ravageur causant des dégâts au mil, au riz, au sorgho et/ou au blé.

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

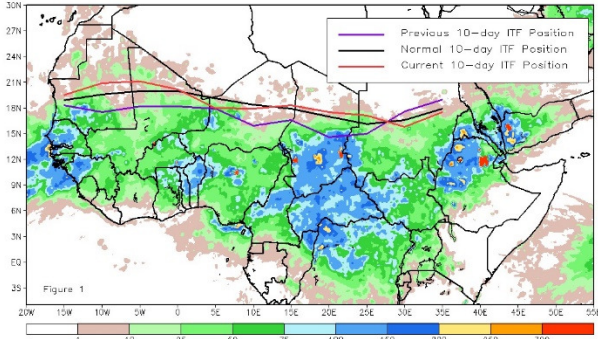
During the 3<sup>rd</sup> dekad (21-31) July, the intertropical front (ITF) moved north,

compared to its previous position. In the western portion (10W-10E), the ITF was located approximately at 19.6N, which was above the climatology position by 0.2 degree for this time. The eastern portion (20E-35E) of the Front was approximated at 17.0N, which was 0.1 degree higher than its climatological position for this period. Figure 1 below shows the current position of the ITF relative to the long-term average position during the 3<sup>rd</sup> and 2<sup>nd</sup> dekads in July respectively.

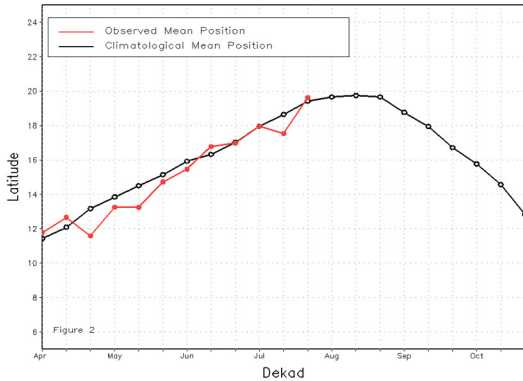
The time series graphic figures below illustrate the latitudinal values of the

western and eastern portions of the ITF, respectively, and their seasonal evolutions since the beginning of April 2022 (NOAA, 8/2022).

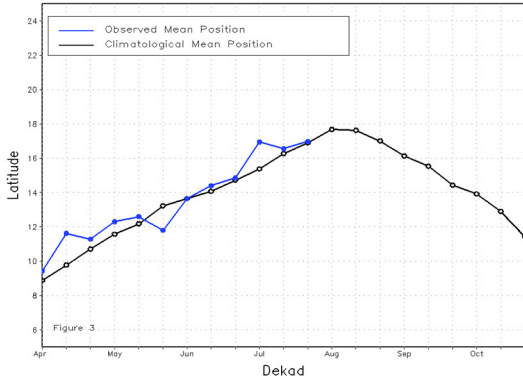
Current vs. Normal Dekadal ITF Position and RFE Accumulated Precipitation (mm) July 2022, Dekad 3



Mean Western Portion of the ITF: Averaged 10W to 10E As of: July 2022, Dekad 3



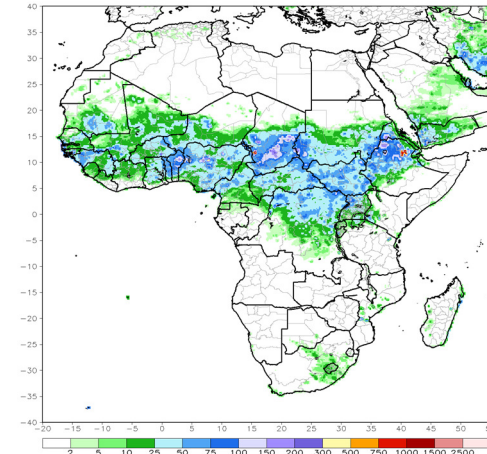
Mean Eastern Portion of the ITF: Averaged 20E to 35E As of: July 2022, Dekad 3



During the last week of July, in East Africa, rainfall was above-average over much of South Sudan, parts of southern and eastern Sudan, northern Uganda, Eritrea and northern Ethiopia. Below-average rainfall was observed over pockets of southern Ethiopia and western

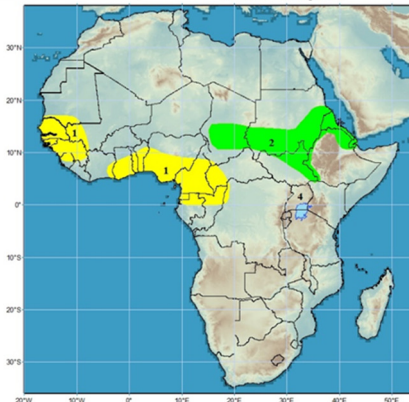
Kenya. In Central Africa, rainfall was above-average over southern Chad and northern DRC. Below-average rainfall was observed over much of CAR and parts of western DRC. In West Africa, above-average rainfall was observed over portions of southern Mauritania, southern Ghana, northern Benin, and pockets of central Nigeria.

RFE2 7-Day Total Rainfall (mm) Period: 25Jul2022 - 31Jul2022



In contrast, parts of Senegal, Guinea, central and southern Mali, Sierra Leone, Liberia, Cote d'Ivoire, Burkina Faso, parts of southern Niger and northern Nigeria received below-average rainfall (map below, NOAA, 8/2022).

Issued: 01 Aug 2022 Week-2 Outlook for Africa Valid: 09 - 15 Aug 2022



1. There is an increased chance for below-average rainfall across southern portions of Mauritania, southwestern Mali, much of Senegal, The Gambia, Guinea-Bissau and Guinea, northern and middle parts of Sierra Leone, eastern Cote d'Ivoire, much of Ghana, Togo, Benin, Cameroon, and Equatorial Guinea, western CAR, and northern parts of Gabon and Congo. An area of anomalous lower-level divergence and upper-level convergence is expected to suppress rainfall in the region. Confidence: Moderate
2. There is an increased chance for above-average rainfall across central portions of Chad, central and southern portions of Sudan, northern and eastern parts of South Sudan, northern Ethiopia, and much of Eritrea and Djibouti. An area of anomalous lower-level convergence and upper-level divergence is expected to enhance rainfall in the region. Confidence: Moderate

During the first week of July, rainfall was above-average in East Africa in parts of

southern Sudan, western South Sudan, and western Ethiopia. Below-average rainfall was observed over pockets of central South Sudan and eastern Ethiopia. In Central Africa, rainfall was above-average in northern and eastern Cameroon, southern Chad, much of CAR, and northern DRC. Below-average rainfall was observed in parts of Cameroon (maps below, NOAA, 7/2022).

Nigeria and Cameroon, southern portions of Niger and western parts of Chad: An area of anomalous lower-level convergence and upper-level divergence is expected to enhance rainfall in the region.

There is an increased chance for below-average rainfall across southeastern Nigeria, southern parts of Cameroon, much of Equatorial Guinea, northern parts of Gabon and Congo, northwestern DR Congo, and southwestern portions of CAR.

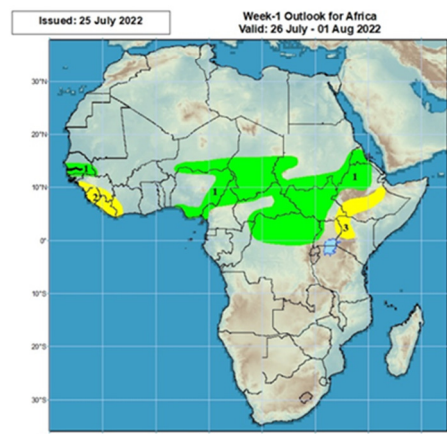
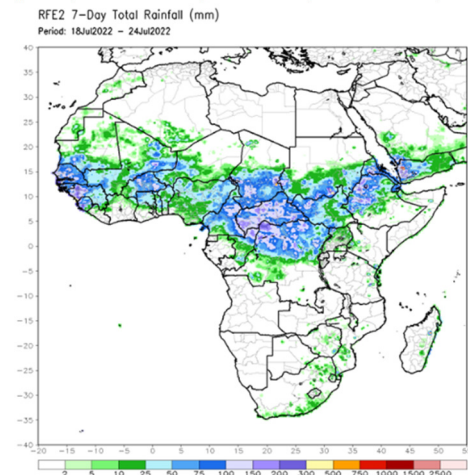
There is an increased chance for above-average rainfall across eastern Chad, western and eastern parts of Sudan and Ethiopia, and much of Eritrea (see map below, NOAA, July 2022).

In **EOR**, heavy rain was reported in Iran during the last week of July.

Dry conditions continued in most of the **NSE** outbreak regions during July except for light rains and showers reported in a few places in Mozambique – 14.00 mm in Mafambisse (Buzi plain), 20.00 mm in Gorongosa (Gorongosa plain), 10.00 mm in Caia (Dimba plains), 13 mm in Buzi and 11.00 mm in Dimba.

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

No significant weather anomalies were observed during July in the Central America and South America locust breeding regions apart from hurricane Agatha that made a landfall in May.



1. There is an increased chance for above average rainfall across central and southern portions of Senegal, much of The Gambia, northern Guinea Bissau, southern Niger, northern, eastern, and southern portions of Nigeria and CAR, northern and central portions of Cameroon, central and southern parts of Chad, western and southern portions of Sudan, much of South Sudan, northern DR Congo, western Uganda, northern and western parts of Ethiopia, northern and central portions of Eritrea. An area of anomalous lower-level convergence and upper-level divergence is expected to enhance rainfall in the region. Confidence: Moderate
2. There is an increased chance for below average rainfall across southern portions of Guinea, much of Sierra Leone and Liberia, and western Cote d'Ivoire. An area of anomalous lower-level divergence and upper-level convergence is expected to suppress rainfall in the region. Confidence: Moderate
3. There is an increased chance for below average rainfall across southern portions of Ethiopia, southeastern South Sudan, northeastern Uganda, and western Kenya. An area of anomalous lower-level divergence and upper-level convergence is expected to suppress rainfall in the region. Confidence: Moderate

**Forecast - From 2-8 August (week 2),** there is an increased chance for above-average rainfall across southern portions of Senegal and Mali, much of Guinea-Bissau and Guinea, western Sierra Leone, eastern and central parts of Burkina Faso, northern portions of Ghana, Togo, Benin,

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

The **Desert Locust** (*Schistoseca gregaria* - **SGR**<sup>2</sup>): In COR, the SGR situation remained calm during July. In Ethiopia, survey operations were reported covered close to 24,000 ha in southern and southwestern Borena, Konso, and Southern Omo zones, but no locusts were detected, and ecological conditions remained unfavorable. In Sudan, low-density solitary immature and mature adults and groups as well as late instar hoppers and groups were reported in summer breeding areas in Derbi in the River Nile State. Scattered solitary mature adults were also reported in several places in surveyed areas (96,100 ha surveyed) with the exception of the Red Sea State (Note: in Sudan, summer breeding areas include River Nile, Northern, Kassala, Khartoum, White Nile, and North Kordofan States). Ecological conditions are improving, and vegetation is expected to begin greening with the ensuing summer rains in most of the summer breeding areas. No surveys were conducted, and no locusts were reported in Djibouti during July. No locusts were detected during surveys in summer breeding areas in Eritrea, Oman, and no reports were received in Egypt, Saudi or Somalia during this month. In Yemen, survey operations covered 45,980 ha in Al-Jawf, Marib and Sana'a, and the situation remained calm and only low numbers of solitary adults were detected in a few locations west of Marib.

**Forecast:** The Horn of Africa region will remain generally calm and only limited breeding is likely in summer breeding areas in Sudan (the River Nile State,

etc.) and Oman where heavy rain was reported during this month. In Yemen, locust will likely begin appearing and breed on a small-scale in some areas where heavy rains fell and ecological conditions are expected to improve but significant development is not likely during the forecast period (the following areas received heavy rains - the interior of Al Jawf, Marib, Shabwah, Hadhramout, Al Maharah governorates, along the Red Sea region, Gulf of Aden, and Arabian Sea coastal plains).

**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, central-southern Morocco, grangerization zones in Chad and in irrigated areas in Algeria in Adrar, but locusts were not reported in those areas during this time. Ecological conditions remained unfavorable during this month in Libya and Tunisia and no locusts were reported.

**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 the SGR situation will remain generally calm throughout the region 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 reported in Iran, and perhaps along the India and Pakistan borders with the onset of the monsoon rains, but significant

<sup>2</sup> Definitions of all acronyms can be found at the end of the report.

developments are 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):**

Significant NSE populations - 8-20 locusts /m<sup>2</sup> were detected in Ikuu plains during a joint aerial survey operations launched by MoA/Tanzania and IRLCO-CSA using an IRLCO-CSA helicopter in July. Control operations were in progress on some 2,500 ha at the time this bulletin was compiled. No NSE presence was reported in Bahi Valley, Wembere plains, Malagarasi Basin and Rukwa Valley in Tanzania. Chilwa/Lake Chiuta plains, Mpatsanjoka Dambo in Malawi; Buzi Gorongosa plains, Dimba plains in Mozambique and Kafue Flats in Zambia remain a concern.

**Forecast:** Immature adults are likely to further concentrate in patches of green vegetation and form swarms during next few months in Lake Chilwa/Lake Chiuta plains in Malawi; Buzi-Gorongosa and Dimba plains in Mozambique; and Kafue Flats in Zambia. Timely surveillance and preventive control remain critical to abate potential swarm spread to neighboring areas and threaten crops and pasture.

**African Migratory Locust (LMI -**

**AML):** LMI was not reported in the southern or central Africa regions during this month.

**Forecast:** Significant activities are not expected in during the forecast period.

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

**Forecast:** No treatable LMC populations are expected until the next season which



will begin with the onset of the seasonal rain sometime in October-November.

### **Central American Locust -**

**Schistocerca piceifrons (CAL):** CAL situation remained generally calm in Central America during July due to unfavorable ecological conditions caused by moderate drought in the region. Only patches of low-density solitary transient 1<sup>st</sup> generation hoppers were observed in Guatemala by the MoA Plant Protection Department (MAGA). MoA experts from the region - Belize, El Salvador, Guatemala, Honduras, Mexico, and Nicaragua held a meeting on 8-19 July in Guatemala on CAL and suggested surveillance continues in the region.

**Forecast:** Should the seasonal rains improve in primary breeding and outbreak areas in CA – Guatemala, Mexico, etc., during the coming months, CAL populations will gradually increase.

**[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.

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

**Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Caucasus and Central Asia (CCA):** A late received update reported DMA lifecycle came to an end in the southern parts of Central Asia (CA), while fledging, mating, and egg-laying continued in Caucasus and other parts of CA during June but expected to continue in Kazakhstan and Russian Federation. CIT activities began during June and continued in the Caucasus region during July. LMI development began and continued through July in Azerbaijan, Kazakhstan, Russian Federation and Uzbekistan. In total so far 1,478,345 ha have been treated in all Caucasus and CA (CCA) till through the end of June, about 10% lower than in 2021 at the same period.

**Forecast:** DMA will likely continue developing in some Caucasus countries, but end in most of the CA region. CIT will continue its development in Caucasus and some CA countries while LMI will continue its presence in northern and western regions of Kazakhstan and Russian Federation and other parts of the CA region.

**Fall armyworm (FAW):** FAW was reported in 292 districts in 36 zones Amhara, Benishangul, Gambella, Oromia, Sidama, and SNNPR Administrative regions where an estimated area of 368,376 ha of maize was reported affected. Chemical (58,442 ha) and cultural (254,329) ha methods were used to control the pest. FAW was reported in irrigated maize fields in Malawi and Zimbabwe. In Malawi, mild infestations were reported in Lakeshore and Shire Valley regions on irrigated maize. In Zimbabwe, Chiredzi district continued reporting infestation of the pest in irrigation schemes. Moderate infestations were reported in Western, Rift Valley and

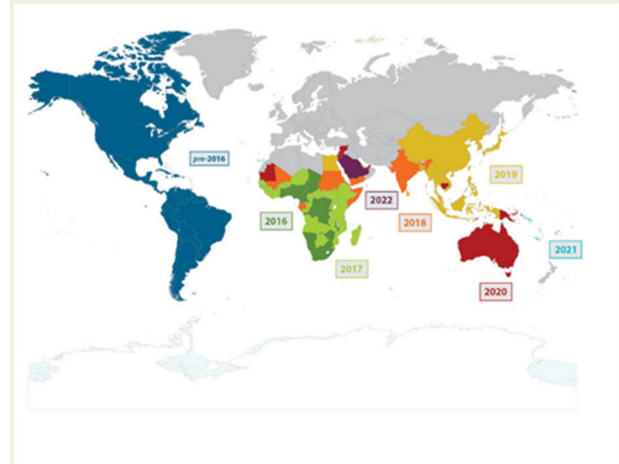
Central regions in Kenya where affected farmers carried out control with materials and technical assistance from the MoA. No reports were received in Tanzania, but irrigated maize and other cereal crops are likely affected. No reports were received in Eritrea, South Sudan, Sudan, etc. during this time. FAW is expected to have continued with its presence in seasonal and/or irrigated crops across the globe where it has invaded and established since its 1<sup>st</sup> ever detection 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). **End note.**

**African Armyworm (Spodoptera exempta, Walker) (AAW):** AAW infestations were reported causing damage to maize in Samburu and Laikipia counties in Kenya and control operations were launched by the affected farmers with material and technical support from MoA. AAW presence was not reported in Malawi, Mozambique, Tanzania, Zambia, or Zimbabwe during this month.

In Ethiopia, AAW infestations were reported in 230 districts in 45 zones in Amhara, Benishangul, Gambella, Oromia, SNNPR, and Sidama administrative region and Southwest. The pest was reported in more than 424,727 ha affecting maize, millet, rice, Teff, and wheat as well as pasture. Control operations were carried out by the affected farmers and the MoA using chemical (232,174 ha) and cultural methods (154,250 ha).

AAW presence was reported in Anseba, Maekel and South in Eritrea affecting crops and pasture in 500 ha in Anseba. Control operations were launched by the

affected farmers in collaboration with the MoA.

**Forecast:** With its northward migration following the ITF trajectory, AAW presence will likely continue winding down in central, eastern, and southern Africa and elsewhere where ecological conditions progressively become unfavorable due to a combination of reduced and/or absence of precipitation and successful timely control. However, during the forecast period, the pest will likely continue with its presence in parts of northern Ethiopia, southern Eritrea, etc., but damage can be minimized with early detection and preventive interventions.

*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):** QSP outbreaks were reported in Nakuru and Meru counties in Kenya where the pest was observed causing damage to wheat. Arrangements for control operations were underway at the time this bulletin was compiled. Outbreaks were also reported in rice and sorghum fields in Mwanza and Morogoro regions in Tanzania where MoA and DLCO-EA jointly carried out aerial control operations covering some 559 ha. In Zimbabwe, the pest was reported attacking millet, sorghum, and wheat in Mashonaland west, Mashonaland Central, Mashonaland East, Matabeleland North,

Matebeleland South, Masvigo and Midlands Provinces and control operations were carried out with avicide and netting. Although an update was not available from other countries at the time this bulletin was compiled, it is likely that QSP continued affecting small-grain cereal crops elsewhere where it is endemic.

**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 not 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 July, but the likelihood of the pest continuing being a problem to pre- and post-harvest crops and produce 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 diligently implementing an updated version of the PSMS with a more user-friendly 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 <sup>D</sup> ~
~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> <sup>TM</sup> (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 (Locust *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 Unites 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](#)

[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](#)

**Point of Contact:**

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**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](#)