

**Emergency Transboundary Outbreak Pest (ETOP) Situation Bulletin for  
October with a forecast through mid-December 2021**  
résumé en français est inclus

**SUMMARY**

The **Desert Locust** (*Schistoseca gregaria* - **SGR<sup>1</sup>**): In the central outbreak region (COR), spring bred locusts matured, laid eggs causing hoppers to start developing in northeastern Somalia (7,486 ha controlled). A few mature swarms were reported in eastern Ethiopia and controlled on 138 ha during this month. A mature swarm from northern Ethiopia reached southern Red Sea coast of Eritrea. One swarm that originated in northeast Somalia passed through eastern Ethiopia and reached northern Kenya. Scattered adults and hoppers were treated on 346 ha in the interior of Sudan. Small adult groups were observed in Djibouti. A few hopper bands and swarms developed in the interior of Yemen. The western outbreak region (WOR) and eastern outbreak region (EOR) generally remained calm during this month. <https://www.fao.org/ag/locusts/en/info/info/index.html>

**Forecast:** In COR, swarms from northern and northwest Somalia, and eastern Ethiopia will breed, hatch and cause hopper bands to form. Breeding is also possible in central Somalia. New swarms will likely start to form in northeast Somalia by mid-December. Swarms from northern Ethiopia will continue migrating to the Red Sea coast in Eritrea and breed. Scattered adults from Sudan interior will continue moving to the Red Sea coast and breed. A few swarms from Yemen interior will migrate to Red Sea coast of Yemen and perhaps southwest coast of Saudi Arabia and breed. <https://www.fao.org/ag/locusts/en/info/info/index.html>

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

**African Migratory Locust:** *Locusta migratoria migratorioides* (**LMI**): LMI populations were detected in Simalaha Plains, Western Province of Zambia.

**Malagasy locust** (*Locust migratoria capito* – **LMIC**): No update was received at the time this bulletin was compiled. However, LMIC activities are expected to commence with the onset of the rains. At the request of the GoM, FAO/ECLO prepared an action plan for the upcoming breeding season.

<sup>1</sup> Definitions of all acronyms can be found at the end of the report.

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

**Central American Locust, *Schistocerca piceiferons* (SPI)(CAL):** No update was received at the time this bulletin was compiled.

**South American Locust, *Schistocerca cancellata* (SCA):** No update was received at the time this bulletin was compiled.

**Italian (CIT), Moroccan (DMA), and Asian Migratory Locusts (LMI):** DMA, CIT and LMI activities are expected to have ended in the southern those and progressively declined in other zones.

**Fall Armyworm (*Spodoptera frugiperda*, J. E. Smith) (FAW):** Infestations of FAW populations was reported in irrigated maize in Lakeshore and shire valley in Malawi. FAW infestation was also reported in Mildland, Zimbabwe and a similar situation is expected elsewhere where the pest presence has been confirmed.

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

**Quelea spp. (QSP):** Reports of QSP outbreaks were received in Ethiopia, Kenya, Zimbabwe where the pest was attacking small grain cereal crops. A similar situation is likely in other cereal producing countries where the pest is endemic and/or invasive.

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

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

## RÉSUMÉ

**La situation du Criquet pèlerin (*Schistoseca gregaria* - SGR):** Dans la région centrale de la résurgence (COR), des criquets reproduits au printemps sont arrivés à maturité, ont pondus et des larves ont commencé à se développer dans le nord-est de la Somalie (7 486 ha contrôlés). Quelques essaims matures ont été signalés

dans l'est de l'Éthiopie et contrôlés sur 138 ha au cours de ce mois. Un essaim mature du nord de l'Éthiopie a atteint la côte sud de la mer Rouge en Érythrée. Un essaim originaire du nord-est de la Somalie est passé par l'est de l'Éthiopie et a atteint le pays de Mandera, au nord du Kenya. Des ailés épars et des larves ont été traités sur 346 ha dans l'intérieur du Soudan. De petits groupes d'ailés ont été observés à Djibouti. Quelques bandes larvaires et essaims se sont développés dans l'intérieur du Yémen. La région ouest de la flambée (WOR) et la région est de la flambée (EOR) sont généralement restées calmes au cours de ce mois.  
<https://www.fao.org/ag/locusts/en/info/info/index.html>

**Prévisions:** Dans le COR, des essaims du nord et du nord-ouest de la Somalie et de l'est de l'Éthiopie vont se reproduire, éclore et provoquer la formation de bandes larvaires. La reproduction est également possible dans le centre de la Somalie. De nouveaux essaims commenceront probablement à se former dans le nord-est de la Somalie à la mi-décembre. Des essaims du nord de l'Éthiopie continueront à migrer vers la côte de la mer Rouge en Érythrée et à se reproduire. Des ailés épars de l'intérieur du Soudan se déplaceront vers la côte de la mer Rouge et se reproduiront. Quelques essaims de l'intérieur du Yémen migreront vers la côte de la mer Rouge du Yémen et peut-être la côte sud-ouest de l'Arabie saoudite et se reproduiront. <https://www.fao.org/ag/locusts/en/info/info/index.html>

**Criquet nomade (*Nomadacris septemfasciata*) (NSE):** Les populations NSE ont persisté dans les plaines du lac Chilwa/lac Chiuta, Mpatsanjoka Dambo au Malawi ; Ikuu-Katavi, Malagarasi, les plaines de Rukwa et la vallée de Bahi en Tanzanie ; Appartements Kafue en Zambie ; Les plaines de Buzi-Gorongosa et Dimba au Mozambique.

**Criquet migrateur africain: *Locusta migratoria migratorioides* (LMI):** Une étude de terrain réalisée par le personnel du ministère de l'Agriculture a révélé des populations de faible densité de LMI dans les plaines de Simalaha, dans la province occidentale de la Zambie.

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

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

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

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

**Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI):** les activités DMA, CIT et LMI devraient avoir pris fin dans le sud de celles-ci et décliner progressivement dans d'autres zones.

**Chenille Légionnaire d'automne** (*Spodoptera frugiperda*, J. E. Smith) (FAW): Des infestations de populations de la chenille légionnaire d'automne ont été signalées dans du maïs irrigué à Lakeshore et dans la vallée du comté au Malawi. Une infestation de CLA a également été signalée à Mildland, au Zimbabwe. Une situation similaire est attendue ailleurs où le ravageur s'est établi.

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

**Quelea spp. oiseaux (QSP):** *Quelea* spp. (QSP): Des rapports de foyers de QSP ont été reçus en Éthiopie, au Kenya, au Zimbabwe et le ravageur a été signalé attaquant les cultures de céréales à petites céréales. Une situation similaire est probable dans d'autres pays producteurs de céréales où le ravageur est endémique et/ou envahissant.

La surveillance active, le suivi et les interventions préventives et curatives opportunes ainsi que le partage des information ETOP restent essentiels pour réduire les menaces que les ETOP font peser sur la sécurité alimentaire et les moyens de subsistance des communautés vulnérables.

**USAID / BHA / PSPM** surveille régulièrement les ETOP en étroite collaboration avec son réseau de PPD / DPV nationaux, d'entités régionales et internationales de surveillance et / ou de lutte antiparasitaire, y compris la FAO/ECLO, la CLCPRO, le CRC, le DLCO-EA et l'IRLCO-CSA, et des centres de recherche, universités, secteur privé, ONG et autres et publie des Bulletins analytiques concis à l'intention des parties prenantes. Fin de résumé

**Note:** All ETOP Bulletins, including previous issues can be accessed and downloaded on USAID Pest and Pesticide Monitoring website: [USAID Pest and Pesticide Monitoring](#)

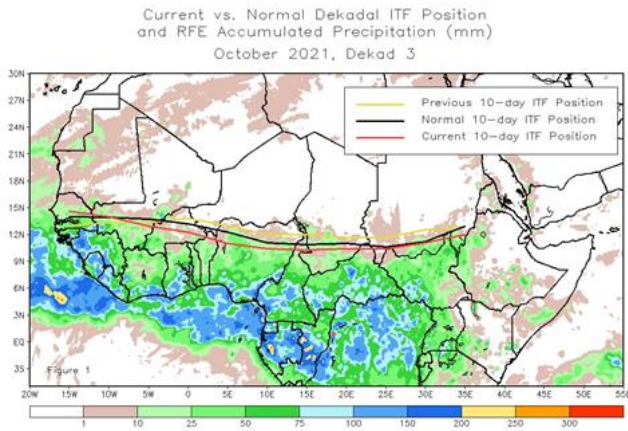
**Additional resources for ETOPs can be found on the last pages of this Bulletin.**

#### **Weather and Ecological Conditions**

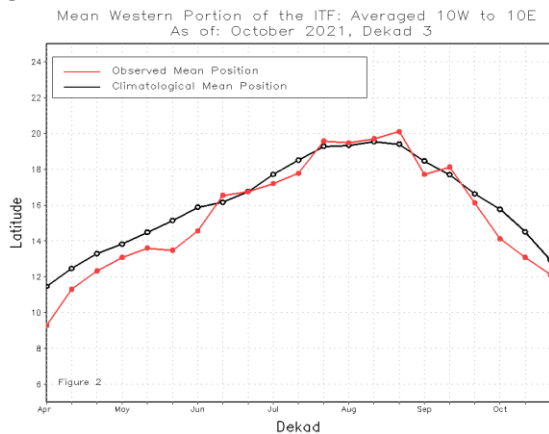
From 21-31 October, the ITF retreated farther south relative to its previous position, which resulted in an overall

anomalous southerly position, except along its western edge. The western (10W-10E) portion of the ITF was located approximately at 12.1N, which led the mean position by 0.7 degree. The eastern (20E-35E) portion of the ITF was approximated at 11N, which led the climatological position by 0.4 degree. Figure 1 displays the current position of the ITF relative to the long-term average position during the 3rd dekad of October and its previous position during the 2nd dekad of October. Figures 2 and 3 are time series, illustrating the latitudinal values of the western and eastern portions of the ITF, respectively, and their seasonal evolutions since the beginning of April, 2021 (NOAA).

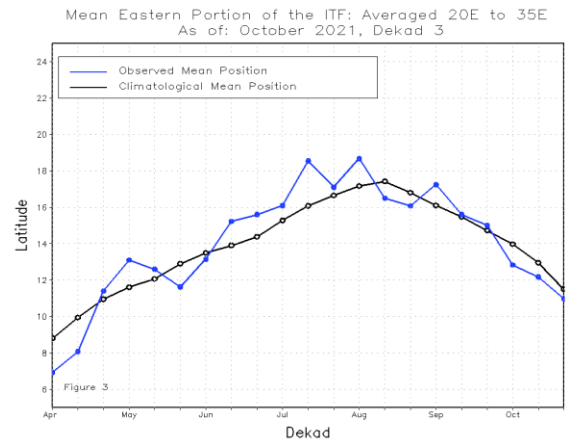
**Figure 1.**



**Figure 2.**



**Figure 3.**



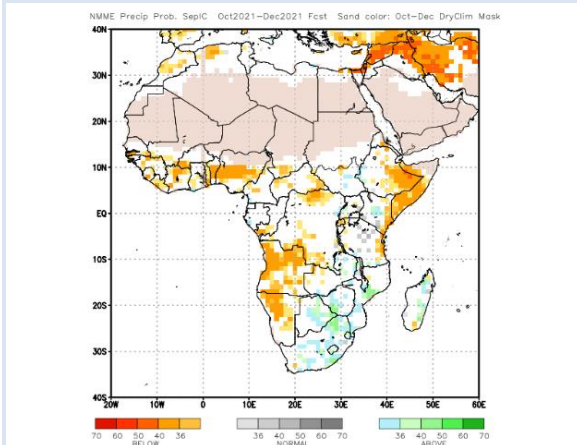
From 11-20 of October, the entire Intertropical Front (ITF) regressed further south as the monsoon rains wind down. The western (10W-10E) portion of the ITF was located approximately at 13.1N, which was 1 degree south of its previous position. It was also south of the climatological position centered at 14.6N. The eastern (20E-35E) portion of the ITF was located at 12.2N, which was south of the climatological position centered at 12.9N and displaced 0.5 degrees further south than the previous dekad. Despite the location, above normal rainfall persisted across Chad. Figure 1 shows the current position of the ITF relative to the long-term average position during the 2nd dekad of October and its previous position during the 1st dekad of October.

In **NSE** region, light rains were received in all outbreak areas (Lake Chilwa/Lake Chiuta plains in Malawi, Buzi-Gorongosa plains and Dimba plains in Mozambique, Kafue Flats in Zambia and Ikuu-Katavi plains, Malagarasi Basin, Lake Rukwa Valley and Bahi Valley in Tanzania (IRLCO-CSA).

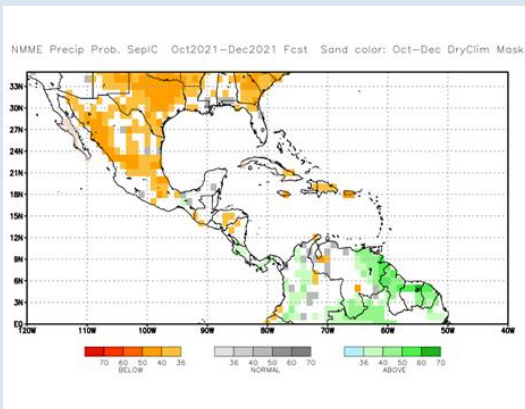
**CCA Region:** Significant weather anomalies were not observed during this month in CCA region.

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

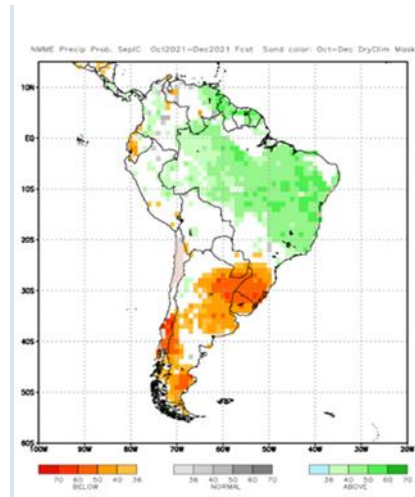
The forecast calls for a slight to moderate tilt in the odds to favor below-average rainfall in parts of the Gulf of Guinea region during this time. There is also a slight to moderate tilt in the odds to favor below-average rainfall in the western portions of **Southern Africa**, parts of DRC, and much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



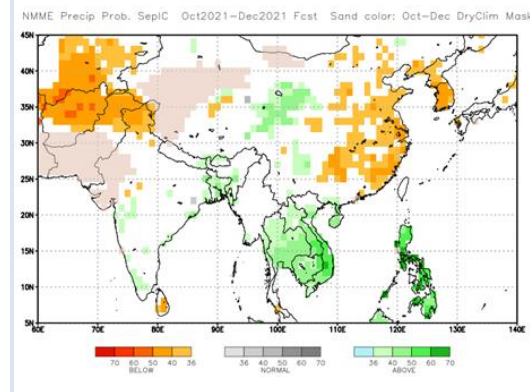
There is a slight tilt in the odds to favor below-average rainfall over the central sector of **Central America**.



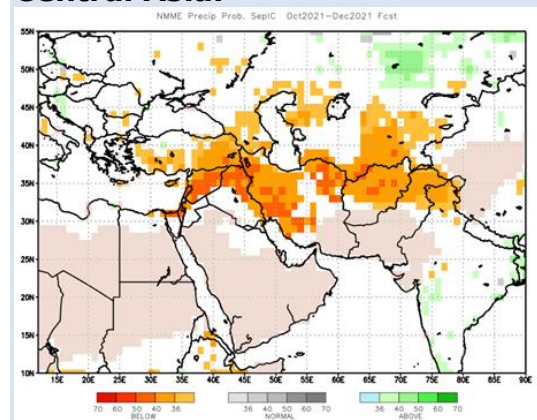
The forecasts call for a moderate tilt in the odds to favor above-average rainfall over the northern portions of **South America**.



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



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



**ETOP proliferation vis-a-vis climate factors**

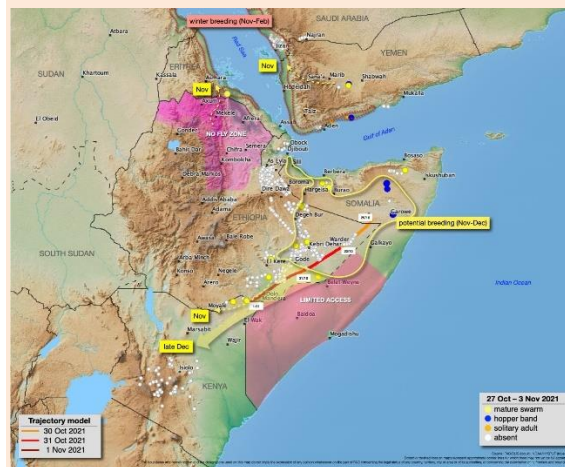
**Note:** Climate change induced weather anomalies contribute to an ecological shift in ETOP habitats, thereby triggering risks in the outbreaks and resurgence of existing ETOPs and/or the emergence of new and invasive pest species. The frequency, extent and payload of ETOP appearances, prevalence, and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

**Detailed Accounts of ETOP Situation and a Forecast for the Next Six Weeks are provided below**

The **Desert Locust** (*Schistoseca gregaria* - **SGR**<sup>2</sup>): In COR, swarms began laying eggs and forming hoppers in northern Somalia, and one small swarm moved through the Somali region in eastern Ethiopia and reached Mandera Kenya adjacent to southeastern Ethiopia the last week of October. Although survey could not be conducted in northern Ethiopia, a mature swarm that likely developed there

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

was reported in the southern Red Sea coast of Eritrea during late October. The situation in Sudan is expected to have been relatively, but no update was received from PPD for the past week due to ongoing disturbances. In Djibouti, surveys were conducted and a few small immature adults were observed southwest of the country near Ethiopia border.



SGR situation and forecast (FAO-DLIS)

Aerial and ground assets have been deployed in the Somalia region of Ethiopia and in Puntland and Somaliland and survey and control operations are in progress. No recent update was received from Yemen during this time due to ongoing insecurity situation. Regardless, the chance of swarms from Yemen migrating to northern Somalia is decreasing as seasonal wind direction is changing and likely pushing back any swarms that could otherwise move to Somalia. Control operations treated 7,486 ha in Somalia, 138 ha in Ethiopia and 346 ha in Sudan thudding October. No locusts were reported elsewhere in COR during this month (BHA/TPQ, DLCO-EA, DLMCC/Yemen, FAO-DLIS, LLC/Oman, PPD/Eritrea, PPD/Ethiopia, PPD/Sudan, SPPV/Djibouti).

**Forecast:** Breeding that is progressing in northern Somalia plateau, northwest coast, and eastern Ethiopia will cause hatching and band formation. More swarms will likely move to northern and northeastern Kenya and start breeding provided conditions become favorable (though la Nina effect will distress precipitation). Breeding is likely in central Somalia and new swarms may form in northeast Somalia by mid-December. Swarms from northern Ethiopia likely continue migrating to coastal areas of Eritrea and start breeding. Swarms will move from the interior of Yemen and migrate to Red Sea coast of Yemen and Saudi Arabia. Adults from interior of Sudan will move to Red Sea coast and begin breed during the forecast period (BHA/TPQ, FAO-DLIS, LLC/Oman, PPD/Ethiopia, PPD/Sudan, SPPV/Djibouti).

**SGR – WOR:** Ecological conditions remained unfavorable across WOR and only a few scattered hoppers and adults were observed in northern Niger and a few isolated low-density immature, maturing and mature adults were detected southwest of Mao near Lake Chad, northeast between Kalait and Fada as well as central and eastern Fada, Chad. No locusts were reported elsewhere in WOR (ANLP/Chad, CNLA/Tunisia, CNLAA/Mauritania, CNLAA/Morocco, CNLCP/Mali, FAO-DLIS, NCDLC/Libya).

**Forecast:** WOR will remain generally calm during the forecast period (ANLP/Chad, CNLA/Tunisia, CNLAA/Mauritania, CNLAA/Morocco, CNLCP/Mali, FAO-DLIS, NCDLC/Libya).

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

**Forecast:** EOR will likely remain calm during the forecast period (FAO-DLIS).

**NOTE:** *Though at an early developmental stage, innovative technologies, such as drones, for high-resolution images in remote sensing are being explored. On trial bases, use of drones for locust monitoring, and limited control in localized and sensitive and hard to reach areas showed promising results. While the range of agricultural oriented drones may be limited for large-area pest control purposes, such as massive swarms and hopper bands, there are interests among countries and partners to work on several parameters associated with such technologies, including air space access protocols and other issues. Crowd sourcing and cloud sourcing for data collection, sharing, etc. are another effort that can be of value to ETOP operations. Dynamic population modeling and biotope modeling, from CIRAD and ICIPE, respectively, and accounting for associated parameters such as soil moisture, vegetation, etc. will likely contribute to better understand ETOP – DL phenology, ecology, habitat range, etc. **End note.***

**Red (Nomadic) Locust (NSE):** NSE remained a concern in Lake Chilwa/Lake Chiuta plains and Mpatsanjoka Dambo in Malawi where swarm concentrations persisted. Breeding was likely triggered in most of the outbreak areas that received light rain. Similar situation is expected in Kafue Flats, in Zambia Iku-Katavi plains, Bahi Valley, Malagarasi Basin and Rukwa valley in Tanzania and Buzi Gorongosa, Dimba plains in Mozambique.

**Forecast:** NSE populations that persisted in the outbreak areas that received rain are likely to successfully



breed and form considerable number of hopper bands in December 2021/January 2022. IRLCO-CSA calls for resources to launch timely surveillance and preventive interventions (BHA/TPQ, IRLCO-CSA).

**African Migratory Locust (LMI):**

Isolated low density LMI populations were reported in Sioma and Kazungula districts of Western and Southern Provinces of Zambia, respectively and monitoring was in progress at the time this bulletin was compiled. Although additional information was not available at the time this Bulletin was compiled, it is likely the pest is present in adjacent areas in neighboring countries (BHA/TPQ, IRLCO-CSA).

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

**Malagasy locust (*Locust migratoria capito* – LMIC):** No update was received at the time this bulletin was compiled; however, breeding is likely as the season rains commence. In anticipation of the next breeding cycle that will follow the beginning of the seasonal rains from October 2021, and at the request of MoA/Madagascar, FAO-ECLC has prepared a joint action plan for the next campaign. The action plan focuses on four key components - 1. Improve monitoring capacity and analysis of the locust situation, 2. Strengthen locust control capacity, 3. Protect human health safety and the environment as well as 4. coordinate and assess the action plan. Resources have been pledged by the Government of Germany to support the proposed action plan (FAO-ECLC). BHA/TPQ and the Geo team will continue monitoring the situation in collaboration

with field staff and provide updates advice as often as necessary.

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

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

**Central American Locust - *Schistocerca piceifrons* (SPI/CAL):**

SPI (CAL): No update was received at the time this bulletin was compiled. However, from October on, CAL may have shown a slight increase in Central American countries.

**Forecast:** There may be some aggregation in CA, but significant gregarization of adult groups and swarm formations are unlikely during November. In Mexico and CA in general, preventive control strategies are available at the solitary level using *Metarhizium acridium* and chemical control (Pech).

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



SENESA, Pech – SENESA, Mexico)

**South American Locust, *Schistocerca cancellata* (SCA)** (a.k.a. Flying lobster):

There was no update at the time this bulletin was compiled. With favorable ecological conditions in place, this species is expected to have continued developing in Argentina where surveillance and control operations are expected to have continued in the outbreak and invasion areas (BHA/TPQ).

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

**Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Caucasus and Central Asia (CCA):** No update was received at the time this Bulletin was compiled, but DMA and CIT activities are expected to have declined and/or ended in some countries in the region. LMI is expected to have reached the end of egg laying.

**Forecast:** Locust activities will end during the forecast period and will remain so till next spring (BHA/TPQ)

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

**Fall armyworm (FAW):** FAW outbreaks were reported affecting irrigated maize in all 8 Agricultural Development Divisions in Malawi, the most affected areas being districts bordering Lake Malawi and Shire Valley. No reports were received from other countries, however, the pest

presence is likely in other maize growing countries in Africa, Asia and elsewhere where maize crops and other cereal crops are in season or are under irrigation schemes (BHA/TPQ, IRLCO-CSA).

**Forecast:** FAW is likely to continue affecting rain-fed and/or irrigated maize and other cereal crops across sub-Saharan Africa, Asia, and elsewhere during the forecast period. Active monitoring, surveillance, reporting, and timely control interventions remain critical to prevent any major damage to crops that can severely affect food security and economic well-being of resource challenged peoples and communities across FAW prone countries (BHA/TPQ).

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

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

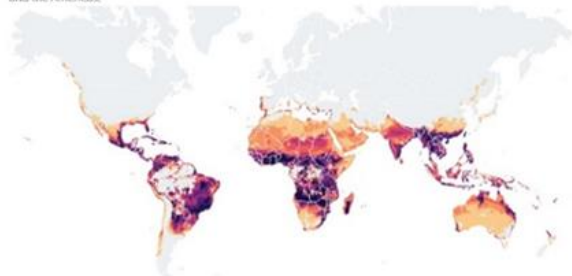
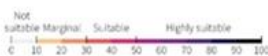
1. Establish a global coordination and regional collaboration on monitoring, early warning, and intelligent pest management of FAW:
2. Reduce crop losses caused by FAW and

3. Reduce the risk of further spread of FAW to new areas (Europe and South Pacific).

**Areas suitable to Fall Armyworm**

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

**ENVIRONMENTAL SUITABILITY INDEX**



Source: CAB, 2019. Invasive Species Compendium, Wallingford, UK: CAB International, P.K. Dutta, 19/06/2019



BHA/TPQ is working with various partners on innovative intervention projects to benefit small-scale farming communities in affected countries with the intention to scale-up gains across different FAW prone regions and consistent with the spirit of GAFC. These initiatives build on experiences gained over the past several years, including outcomes of projects and programs supported through legacy OFDA, legacy BFS, CGIARs, FAO, national partners, and several other entities.

**Tackling the Challenge of FAW...**



(Source: Prasanna, 2021)

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

before they are released for extensive use. **End note.**

**African Armyworm (AAW):** AAW was not reported in outbreak and/or invasion areas during this month (BHA/TPQ, IRLCO-CSA).

**Forecast:** Significant AAW appearance is unlikely during the forecast period. However, with the arrival of the seasonal rains, trap operators should continue replenishing and inspecting traps (BHA/TPQ, IRLCO-CSA).

**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 infestations were reported affecting teff and wheat in Oromia administrative region in Ethiopia and aerial control was conducted by DLCO-EA between 21-29 October covering 325 ha. The pest population was so dense it required repeated spraying in the same location. QSP populations were reported attacking wheat and barley in Matabeleland West, Midlands and Mashonaland, Zimbabwe, and control operations were carried out by the Parks and Wildlife Management. Outbreaks were also reported in Narok, Kwale and Kirinyaga Counties of Kenya. Survey operations are in progress to locate roosts (DLCO-EA, IRLCO-CSA).

**Forecast:** QSP outbreaks are likely to continue being a problem to field and irrigated small grain cereal growers across different regions (BHA/TPQ, DLCO-EA, IRLCO-CSA).

**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 (TPQ/P&PM).

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

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

**NOTE:** Acute food insecurity hotspots outlook – the below map shows several countries and regions that are exposed to and/or are food insecure and vulnerable to ETOP invasions, including locusts, FAW and several other stressors, such as drought, COVID pandemic, flooding, conflicts, etc. (Map source: FAO-WFP, August to November 2021 prediction).

**END NOTE**

**All ETOP front-line countries** must maintain regular monitoring and surveillance operations as well as launch control interventions in a timely manner. Regular crop scouting is critical to avoid damage /losses. Invasion countries must

also remain on alert. Regional and national ETOP entities - DLCO-EA, IRLCO-CSA, DLCCs, DLMCC, CNLAs, ELOs, National DPVs and PPDs, etc., are encouraged to continue sharing ETOP information with stakeholders, including neighboring countries, and humanitarian and development partners, etc., as often as possible. Lead farmers, field scouts, community forecasters and others must remain vigilant and report ETOP detections to relevant authorities in their jurisdiction as quickly and as often as possible.

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

**BHA's Contributions to ETOP Abatement Interventions**

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

OSE is a notorious pest of cereal and vegetable crops and pasture and causes serious damage to small-holder farmers across wide geographic coverage extending from the Canneries to Cape Verde to nearly all sub-Saharan Africa regions to India and beyond. This pest occurs more frequently than several other grasshopper/locust species and is a constant threat to farmers and pastoralists.

USAID/BHA/TPQ will continue its support through a DRR project to strengthen national and regional capacity of the Caucasus and Central Asia (CCA) countries that are constantly affected by three major locust species – Moroccan

*locust, Italia locust and the Migratory locust. These locusts affect food security and livelihoods of more than 25 million people across CCA regions.*

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

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

**Note:** A sustainable Pesticide Stewardship (SPS) can contribute to strengthening pesticide delivery system (PDS) at the national and regional levels. A viable SPS can be effectively established by linking key stakeholders across political boundaries and geographic regions. A strong and viable PDS can effectively reduce pesticide related human health risks, minimize environmental pollution, reduce pest control costs, improve food security, and contribute to the national economy. **End note.**

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

### **Inventory of Strategic Pesticide Stocks for SGR Control**

During October, aerial and ground operations treated 7,486 ha in Somalia, 138 ha in Ethiopia and 346 ha in Sudan (BHA/TPQ, FAO-DLIS, PPD/Ethiopia).

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

Country	Quantity, l/kg*
Algeria	1,186,034~
Chad	65,270
Egypt	10,253 ULV, 45,796~
Eritrea	10,750~
Ethiopia	110,543~
Libya	24,930~
Kenya	
Madagascar	206,000~ + 100,000 <sup>D</sup>
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	103,482~
South Sudan	
Tunisia	62,200 obsolete
Uganda	
Yemen	10,000; 180 kg GM

\*Includes different pesticides and formulations - ULV, EC and dust.

~ data may not be current.

<sup>D</sup> = Morocco donated 100,000 l of pesticides to Madagascar and 10,000 l to Mauritania in 2015 through triangulation

<sup>D</sup> = In 2013 Morocco donated 200,000 l to Madagascar

<sup>D</sup> = Saudi donated 10,000 to Yemen and pledged 20,000 l to Eritrea

<sup>DM</sup> = Morocco donated 30,000 l of pesticides to Mauritania

GM = *GreenMuscle*<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)*  
 APLC *Australian Plague Locust Commission*  
 APLC *Australian Plague Locust Commission Bands groups of hoppers marching pretty much in the same direction*  
 ASARECA *Association for Strengthening Agricultural Research in Eastern and Central Africa*  
 BHA *Bureau for Humanitarian Assistance*  
 CABI *Center for Agriculture and Biosciences International*  
 CAC *Central Asia and the Caucasus*  
 CBAMFEW *Community-based armyworm monitoring, forecasting and early warning*

CERF *Central Emergency Response Fund*  
 CIT *Calliptamus italicus (Italian Locust)*  
 CLCPRO *Commission de Lutte Contre le Criquet 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*  
 DMA *Dociostaurus maroccanus (Moroccan Locust)*  
 DPPQS *Department of Plant Protection and Quarantine Services, India*  
 DPV *Département Protection des Végétaux (Department of Plant Protection)*  
 ELO *EMPRES Liaison Officers -*  
 EMPRES *Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases*  
 EOR *Eastern SGR Outbreak Region*  
 ETOP *Emergency Transboundary Outbreak Pest*  
 Fledgling *immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully developed reproductive organs to breed*  
 GM *GreenMuscle® (a fungal-based biopesticide); NOVACRID, Green Guard*  
 ha *hectare (= 10,000 sq. meters, about 2.471 acres)*

<i>ICAPC IGAD's Climate Prediction and Application Center</i>	<i>PHS Plant Health Services, MoA Tanzania</i>
<i>IGAD Intergovernmental Authority on Development (Horn of Africa)</i>	<i>PPD Plant Protection Department</i>
<i>IRIN Integrated Regional Information Networks</i>	<i>PPM Pest and Pesticide Management</i>
<i>IRLCO-CSA International Red Locust Control Organization for Central and Southern Africa</i>	<i>PPSD Plant Protection Services Division/Department</i>
<i>ITCZ Inter-Tropical Convergence Zone</i>	<i>PRRSN Pesticide Risk Reduction through Stewardship Network</i>
<i>ITF Inter-Tropical Convergence Front = ITCZ)</i>	<i>QSP Quelea species (Red Billed Quelea bird)</i>
<i>FAO-DLIS Food and Agriculture Organizations' Desert Locust Information Service</i>	<i>SARCOF Southern Africa Region Climate Outlook Forum</i>
<i>Hoppers young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)</i>	<i>SCA Schistocerca cancellata (South American Locust)</i>
<i>JTWC Joint Typhoon Warning Center</i>	<i>SFR Spodoptera frugiperda (SFR) (Fall armyworm (FAW))</i>
<i>Kg Kilogram (~2.2 pound)</i>	<i>SGR Schistoseca gregaria (the Desert Locust)</i>
<i>L Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)</i>	<i>SPI Schistocerca piceifrons piceiferons (Central American Locust)</i>
<i>LCC Locust Control Center, Oman</i>	<i>SSD Republic of South Sudan</i>
<i>LMC Locusta migratoriacapito (Malagasy locust)</i>	<i>SPB Southern Pine Beetle (Dendroctonus frontalis) – true weevils</i>
<i>LMI Locusta migratoria migratorioides (African Migratory Locust)</i>	<i>SWAC Southwest Asia DL Commission</i>
<i>LPA Locustana pardalina</i>	<i>PBB Pine Bark Beetle</i>
<i>MoAFSC Ministry of Agriculture, Food Security and Cooperatives</i>	<i>PSPM Preparedness, Strategic Planning and Mitigation (formerly known as Technical Assistance Group - TAG)</i>
<i>MoAI Ministry of Agriculture and Irrigation</i>	<i>TPQ Technical Program and Quality Triangulation The process whereby pesticides are donated by a country, with large inventories, but often no immediate need, to a country with immediate need with the help of a third party in the negotiation and shipments, etc. Usually, FAO plays the third-party role in the case of locust and other emergency pests.</i>
<i>MoARD Ministry of Agriculture and Rural Development</i>	<i>UF University of Florida</i>
<i>NALC National Agency for Locust Control</i>	<i>USAID the United States Agency for International Development</i>
<i>NCDLC National Center for the Desert Locust Control, Libya</i>	<i>UN the United Nations</i>
<i>NOAA (US) National Oceanic and Aeronautic Administration</i>	<i>WOR Western SGR Outbreak Region</i>
<i>NPS National Park Services</i>	<i>ZEL Zonocerus elegans, the elegant grasshopper</i>
<i>NSD Republic of North Sudan</i>	
<i>NSE Nomadacris septemfasciata (Red Locust)</i>	
<i>OFDA Office of U.S. Foreign Disaster Assistance</i>	
<i>PBB Pine Bark Beetle (Dendroctonus sp. – true weevils</i>	
<i>PHD Plant Health Directorate</i>	

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 website:  
[USAID/BHA PPM Web](#)

**Additional resources on SGR and other ETOPs**

SGR  
USAID Pest Monitoring: [USAID/BHA PPM Web](#)

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

UN/FAO Desert Locust Watch  
<http://www.fao.org/ag/locusts/en/info/info/index.html>

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

FAO Locust Emergency Appeal for Greater Horn of Africa and Yemen

[http://www.fao.org/fileadmin/user\\_upload/emergencies/docs/Greater%20Horn%20of%20Africa%20and%20Yemen%20%20Desert%20locust%20crisis%20appeal%20%20May%202020.pdf](http://www.fao.org/fileadmin/user_upload/emergencies/docs/Greater%20Horn%20of%20Africa%20and%20Yemen%20%20Desert%20locust%20crisis%20appeal%20%20May%202020.pdf)

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

FAO visuals on SGR

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

FAO Desert Locust Crisis

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

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

CIT, DMA and LMI – FAO-PPPD

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

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

FAO/Central Region Locust Control Commission

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

FAO/Western Region Locust Control Commission

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

FAO Locust Watch - Central Asia and Caucasus

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

IGAD Climate Predication and Application Centres

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

USAID supports for locust operations in the CAC Region:



<http://www.fao.org/locusts-cca/programme-and-donors/projects-donors/en/>

FAO SGR Response Overview Dashboard

<http://www.fao.org/locusts/response-overview-dashboard/en/>

FAO Locust Hub

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

FAW

USAID FtF FAW

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

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

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

USAID FAW PEA/PERSUAP

<https://ecd.usaid.gov/repository/pdf/50065.pdf>

FAO FAW Monitoring and Early warning System

<http://www.fao.org/3/CA1089EN/ca1089en.pdf>

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

FAO NURU FAW Application

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

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

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

FAW management animation SAWBO

<https://sawbo-animations.org/video.php?video=//www.youtube.com/embed/5rxlpXEK5q8>

AAW

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

FEWS NET

<https://fews.net/>

NOAA CPC

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