

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

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹): In the central outbreak region (COR), locusts continue appearing in the Horn of Africa and control operations were conducted on 55 ha in southeast Djibouti, 3,788 ha in eastern Ethiopia, and 27,162 ha in northwestern Somalia during this month. A decline in swam movements from northwest Somalia to northeast Ethiopia was observed. Locust also continued appearing in Sudan and Yemen and control operations treated 525 ha and 50 ha in the Nile Valley in Sudan and in southern Egypt, respectively. No locusts were reported in Kenya, South Sudan, Tanzania or Uganda. A few immature swarms moved from Yemen highlands to the interior of the country and began breeding. Scattered adults were controlled on 30 ha in Morocco and a few isolated adults were observed in central Algeria and Niger in the western outbreak region (WOR). No locusts were reported in the eastern outbreak region (EOR) during this month.

Forecast: In COR, breeding and band formations are expected in northeast Ethiopia and southern Djibouti and a few immature swarms are likely to persist in northwest Somalia. Small-scale breeding is likely in Sudan and western Eritrea and breeding is expected to increase and small bands may form in the interior of Yemen. In WOR, small-scale breeding is likely in northern Mauritania, Mali, Niger, and Chad. In EOR, small-scale breeding is likely along both sides of the India-Pakistan border.

Red (Nomadic) Locust (*Nomadacris septemfasciata*) (**NSE**): Scattered NSE populations were reported in Malawi, Mozambique, Tanzania and Zambia.

African Migratory Locust: *Locusta migratoria migratorioides* (**LMI**): Scattered populations of LMI were reported in Zambia.

Malagasy locust (*Locust migratoria capito* – **LMIC**): LMIC activities are expected to have slowed down due to cold weather. FAO/ECLC, at the request of the MoA/Madagascar, prepared an action plan for the next campaign season.

Tree Locusts, *Anacridium* spp. (ASP): No ASP activities reported during July

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

Central American Locust, *Schistocerca piceiferons* (SPI)(CAL): CAL remained generally calm in Central America (CA) and only limited control was needed.

South American Locust, *Schistocerca cancellata* (SCA): SCA activities are expected to have continued in parts of Argentina and adjacent areas.

Italian (CIT), Moroccan (DMA), and Asian Migratory Locusts (LMI): DMA, CIT and LMI activities are expected to continue in parts of Caucasus and Central Asia (CCA).

Fall Armyworm (*Spodoptera frugiperda*) (FAW): FAW attack was reported in irrigated maize in Kenya, Malawi, Tanzania, and Zambia. FAW outbreaks are likely in rainfed and/or irrigated maize and other crops across countries and regions.

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

Quelea spp. (QSP): QSP outbreaks were reported in Matebeleland North Province in Zimbabwe and Meru County in Kenya; a similar situation is likely elsewhere.

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 continuent d'apparaître dans la Corne de l'Afrique et des opérations de lutte ont été menées sur 55 ha dans le sud-est de Djibouti, 3 788 ha dans l'est de l'Éthiopie et 27 162 ha dans le nord-ouest de la Somalie au cours de ce mois. Une baisse des déplacements en nage du nord-ouest de la Somalie vers le nord-est de l'Éthiopie a été observée. Les opérations de lutte ont traité respectivement 525 ha et 50 ha dans la vallée du Nil au Soudan et dans le sud de l'Égypte. Aucun criquet n'a été signalé au Kenya, au Soudan du Sud, en Tanzanie ou en Ouganda. Quelques essaims immatures se sont déplacés des hautes terres du Yémen vers l'intérieur du pays et ont commencé à

se reproduire. Des ailés épars ont été contrôlés sur 30 ha au Maroc et quelques ailés isolés ont été observés dans le centre de l'Algérie et du Niger dans la région ouest de la résurgence (WOR). Aucun criquet n'a été signalé dans la région de résurgence orientale (EOR) au cours de ce mois.

Prévisions: Dans le COR, une reproduction et des formations de bandes sont attendues dans le nord-est de l'Éthiopie et le sud de Djibouti et quelques essaims immatures vont probablement persister dans le nord-ouest de la Somalie. Une reproduction à petite échelle est probable au Soudan et dans l'ouest de l'Érythrée et on s'attend à ce qu'une reproduction s'intensifie et de petites bandes pourraient se former dans l'intérieur du Yémen. Dans le WOR, une reproduction à petite échelle est probable dans le nord de la Mauritanie, du Mali, du Niger et du Tchad. En EOR, une reproduction à petite échelle est probable le long des deux côtés de la frontière indo-pakistanaise.

Criquet nomade (*Nomadacris septemfasciata*) (NSE): des populations éparses de NSE ont été signalées dans les zones de résurgence au Malawi, au Mozambique, en Tanzanie et en Zambie.

Criquet migrateur africain: *Locusta migratoria migratorioides* (LMI): des populations éparses de LMI ont été signalées en Zambie.

Criquet migrateur capito, (LMIC): Les activités des LMIC devraient avoir ralenti en raison du temps froid. FAO/ECLO, à la demande du MoA/Madagascar, a préparé un plan d'action pour la prochaine campagne de campagne.

Le criquet arborial, *Anacridium spp*: (ASP): n'a pas été signalé au cours de ce mois.

Criquet Amérique centrale, *Schistocerca piceifrons piceiferons* (SPI/CAL): le CAL est resté généralement calme en Amérique centrale (CA) et a nécessité des opérations de lutte limitées.

Criquet d'Amérique du Sud, *Schistocerca cancellata* (SCA/SAL): es activités de la SAL devraient se poursuivre dans certaines parties de l'Argentine et dans les zones adjacentes.

Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI):

Chenille Légionnaire d'automne (*Spodoptera frugiperda*) (FAW): Une attaque de chenille légionnaire d'automne a été signalée dans le maïs irrigué au Kenya, au

Malawi, en Tanzanie et en Zambie. Les épidémies de CLA sont probables dans le maïs pluvial et/ou irrigué et d'autres cultures dans tous les pays et régions.

Chenille Légionnaire africaine (AAW): aucun foyer d'AAW n'a été signalé au cours de ce mois.

Quelea spp. oiseaux (QSP): des foyers de QSP ont été signalés dans la province du Matebeleland Nord au Zimbabwe et dans le comté de Meru au Kenya.

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 on ETOPs can be found on the last pages of this Bulletin.

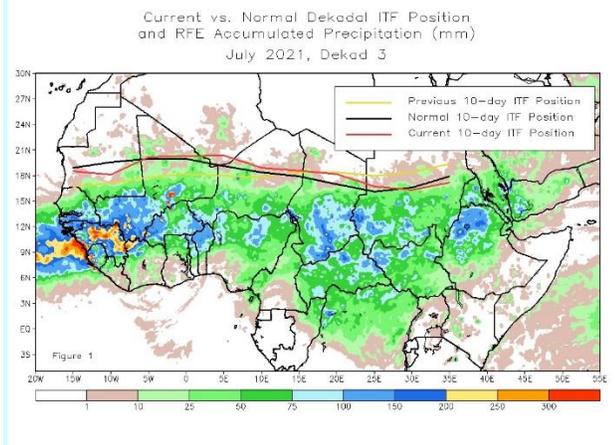
Weather and Ecological Conditions

During July, in East Africa, above-average rainfall was observed over southern Sudan, South Sudan, Eritrea, northern Ethiopia, and local areas in western Kenya. Rainfall was below-average over central Ethiopia and Uganda. In Central Africa, rainfall was well above-average in Chad, much of CAR, local areas in northern DRC, and northern Congo. In contrast, below-average precipitation was occurred over many parts of Cameroon,

western CAR, and central DRC. In Southern Africa, portions of Mozambique and eastern Madagascar experienced positive rainfall anomalies. In West Africa, rainfall was above-average over southern and eastern Senegal, eastern Guinea-Bissau, Guinea, Sierra Leone, northern and southern Liberia, parts of Côte d'Ivoire, much of Mali, eastern and western Burkina Faso, northern Togo, northern Benin, Niger and northern Nigeria. Moisture deficits were observed over northern and western Senegal, local areas in Mali, central Burkina Faso, northern Ghana, southern Benin, and many parts of Nigeria (NOAA)

From 21-31 July, the ITF moved farther north relative to its position during the previous period. From 10W-10E, the mean western portion of the ITF was located at 19.6N, which was to the north of the mean position by 0.2 degree. From 20E-35E, the mean eastern portion of the

ITF was approximated at 17.1N, leading the climatological position by 0.2 degree. The abnormal northerly position of the ITF might have contributed to the wetness over many areas of West Africa and eastern Africa during the period. Figure 1 displays the current position of the ITF relative to the long-term average position during the 3rd dekad of July and its previous position during the 2nd dekad of July. 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.



Forecast: From 3 – 9 August, there is an increased chance for above-average rainfall over southern Senegal, Guinea-Bissau, Guinea, Sierra Leone, southern Mali, northern Cote d'Ivoire, western Burkina Faso, northern Benin, southern Niger, northern Nigeria, Chad, western Sudan, eastern Sudan and western Ethiopia. In contrast, the outlooks for an increased chance for below-average rainfall over eastern Cote d'Ivoire, central Ghana, Togo, Benin, southwestern Nigeria, northern Congo, southern CAR and northern DRC.

From 10 - 14 August – there is an increased chance for above-average rainfall across Guinea, Sierra Leone,

southern Mali, Burkina Faso, northern Ghana, northern Togo, northern Benin,

Figure 2

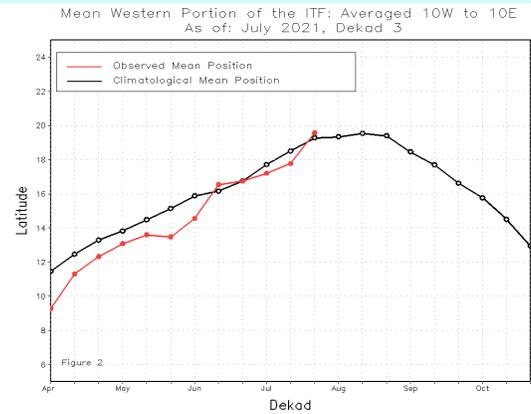
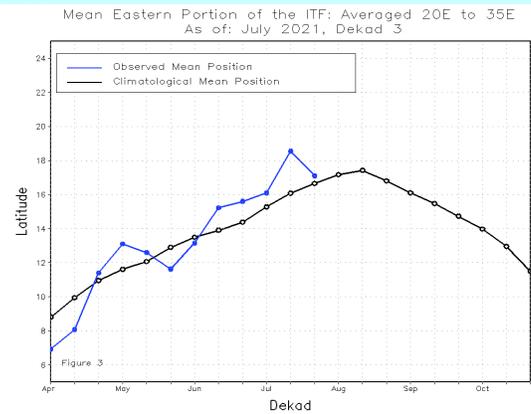
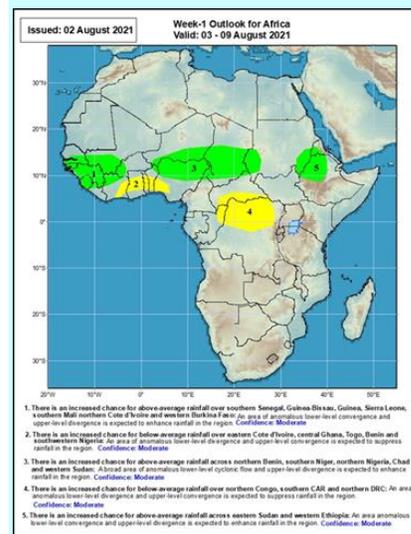


Figure 3

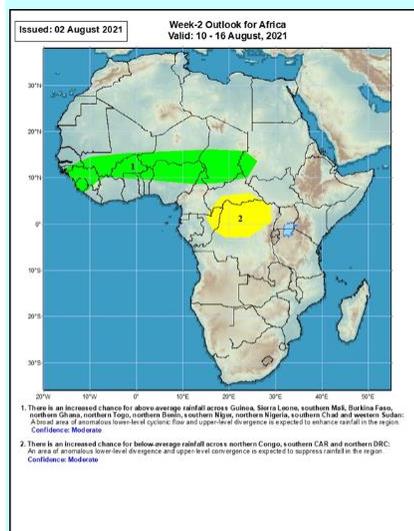


MAP A



southern Niger, northern Nigeria, southern Chad and western Sudan. In contrast there an increased chance for below-average rainfall across northern Congo, southern CAR and northern DRC (NOAA, 8/21).

Map B



The **NSE** region, remained generally dry during July; only isolated showers were recorded in the Buzi-Gorongosa plains (Gorongosa 3.0 mm, Nhamatanda 6.0 mm, Buzi 6.0 mm, Mafambisse 7.0 mm and Dimba plains (Caia 3.0 mm Dimba 5.0 mm) in Mozambique and low temperatures were recorded in the outbreak areas (IRLCO-CSA, NOAA).

CCA Region: Significant weather anomalies were not observed in CCA region; normal summer weather with warmer temperatures and precipitation, suitable for locust development prevailed.

ETOP proliferation vis-a-vis climate factors

Note: Changes in the weather pattern such as increased or decreased temperatures and precipitation can contribute to an ecological shift in ETOP habitats and could increase or decrease the risk of pest outbreaks, resurgence and/or emergence of new pests. The extended ETOP appearance, prevalence, outbreaks, and upsurges are partially attributed to the change in the weather pattern, i.e., extensive, and above normal rainfall partly associated with the occurrence of multiple cyclones over a period of less than two years – May 2018 to December 2019 in the COR region.

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**²): In COR, immature swarms were controlled on 55 ha in southeast Djibouti, 3,788 ha in eastern Ethiopia, and 27,162 ha against immature adults and or hopper bands in northwestern Samalia. Swarm movement from northwest Somalia to the Afar region in northeast Ethiopia showed a decline due to intensive control and cold weather. A few immature swarms persist in northwest Somalia.

While regular survey and control operations were progressing in Ethiopia and locusts were not reported during the last two weeks in July, the ongoing insecurity situation did not allow aerial

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

and to some extent ground surveillance and control in locust breeding areas in Afar region and in invasion areas in Amhara region.

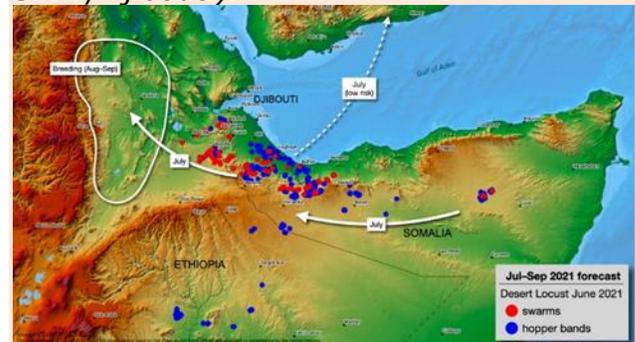
In Sudan, control operations were carried out against groups of breeding and immature adults, hopper groups and bands ranging from 1st to 5th instar and fledglings in 525 ha in several locations in the Nile Valley near Karima and east of Shendi in the River Nile State. As a result of good rains, favorable conditions have been created in most of the summer breeding areas. Survey operations covered several areas in Khartoum, River Nile, Northern, North, South and West Kordofan, Kassala, Blue Nile and summer breeding belt of the Red Sea State during this month. Control treated 50 ha in southeast Egypt.

Breeding continued in Yemen where survey operations over 91,000 ha detected a few immature and maturing swarms in the western highland between Sa'ada and Abyan. Immature and mature swarms were observed in Shabwa and isolated hoppers and scattered adults were detected in several locations in Marib and Hadramaut during July. In Oman, the situation remained calm and no locusts were reported during this month (DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Ethiopia, PPD/Sudan, SPPV/Djibouti).

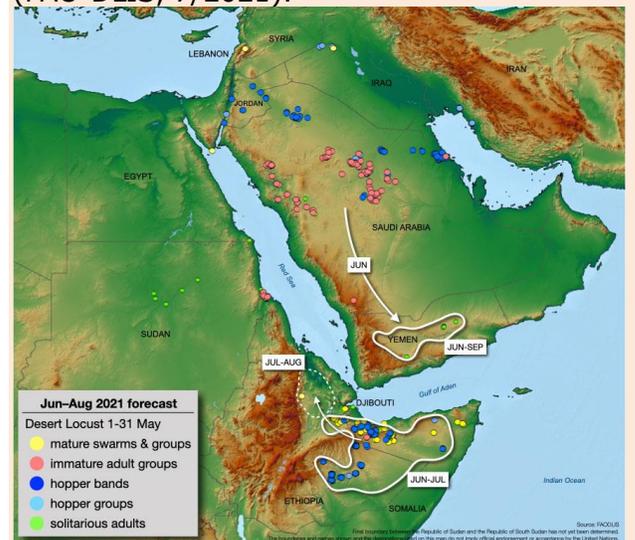
Forecast: In northeast Ethiopia and southern Djibouti, egg laying, hatching, and band formations are likely. Summer rains that were reported in the Afar region in northeastern Ethiopia contribute to favorable conditions for swarms to mature and begin breeding in the coming months. In Ethiopia, extensive aerial and ground surveillance and control are necessary to avoid further developments and minimize severe crop damage. The

situation could be exacerbated by the likely invasions of eastern Afar by swarms coming from Yemen in the coming months.

Small-scale breeding is likely in Sudan and western Eritrea. Survey operations are expected to extend to Gezira, Gedaref, White Nile, as well as North and West Darfur States at the beginning of August in Sudan where good rains from July will create favorable conditions for locusts to appear and begin breeding in the coming months. In Oman and Yemen, ecological conditions are expected to improve allowing limited breed during the forecast period (BHA/TPQ, DLMCC/Yemen, FAO-DLIS, LLC/Oman, PPD/Eritrea, PPD/Ethiopia, PPD/Sudan, SPPV/Djibouti).



Locust forecast map from July-September (FAO-DLIS, 7/2021).



Projected locust dispersal June to August (FAO-DLIS).

SGR – WOR: In WOR, mature solitary, adults were controlled in 30 hectares in the Tafilalet region in Morocco. In Chad, a few isolated adults were observed in the primary breeding areas despite. Isolated adults were reported in central Algeria and Niger, but no locusts were reported in Mali, Mauritania, or Libya during this month (ANLP/Chad, CNLCP/Mali, CNLAA/Mauritania, CNLAA/Morocco, FAO-DLIS, LLD/Libya).

Forecast: In WOR, small-scale breeding is likely in northern Mauritania, Mali, Niger, and Chad during the forecast period (ANLP/Chad, CNLCP/Mali, CNLAA/Mauritania, CNLAA/Morocco, FAO-DLIS, LLD/Libya).

SGR - EOR: EOR remained calm, and no locusts were reported during this month (FAO-DLIS).

Forecast: Small-scale breeding is likely along both sides of the India-Pakistan border in EOR (FAO-DLIS).

NOTE: *Potential use of innovative technologies, such as drones, for high-resolution images in remote sensing is being explored. On trial bases, use of drones for locust monitoring, and control in localized and sensitive, hard to reach areas showed promising results. While range of agricultural drones may be limited, 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 and cloud sourcing for data collection, sharing, etc. is 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): The NSE situation remained relatively calm in Buzi-Gorongosa and Dimba plains in Mozambique where community-based monitors reported scattered low density (1-2 locust/m²) populations. Scattered low density populations were also reported in the Kafue Flats in Zambia, and a similar situation is likely in Ikuu-Katavi plains, Malagarasi Basin as well as Bahi and Rukwa Valley in Tanzania. The situation in the Lake Chilwa/Lake Chiuta plains that straddle Malawi and Mozambique remains unclear due to absence of surveys (IRLCO-CSA).

Forecast: With vegetation burning in progress across the IRLCO-regions, NSE will further concentrate and form swarms that could migrate to neighboring areas and affect crops and pasture. Timely aerial and ground surveillance and control operations remain critical to avert any major threats to food security and livelihoods communities across countries and regions (BHA/TPQ, IRLCO-CSA).

African Migratory Locust (LMI): LMI activities were not reported in IRLCO-CSA member states except some isolated scattered adults in the western Province in Zambia. A similar situation is likely in neighboring countries in the southern Africa region (BHA/TPQ, IRLCO-CSA).

Malagasy locust (Locust migratoria capito – LMIC): Drought and the winter cold season is expected to have slowed down locust movements and development in areas that were

previously invaded in the southern region. COVID-19 related travel restrictions affected timely staff and material movements to the affected areas. In anticipation of the next breeding season and at the request of the MoA/Madagascar, FAO-ECLC prepared a joint action plan for the next campaign that will follow the seasonal rains in October 2021. 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 protect the environment; 4. coordinate and assess the action plan (FAO-ECLC).

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): CAL generally remained calm in Mexico and other countries in Central America (CA) and only patches of adult locusts are being detected and controlled during this month [note: During May, patches of early nymph - see picture below - were detected in CA and begun further developing following the seasonal rain...]

Forecast: CAL is expected to begin mating in August and egg laying by September with 2nd generation developing in October and likely requiring increased intervention (Pech).

[**Note:** CAL is a pest of economic importance in Mexico and CA where it attacks hundreds of species of plants of economic importance, including agave,

banana, beans, corn, cotton, peanut, rice, sesame, soybean, sorghum, sugarcane, several fruit trees].



SENESA, Petch - SENESA, Mexico)

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

With the rainy season in place, locusts are expected to have continued developing in Chaco and Formosa provinces in Argentina. Surveillance and control operations likely continued in the outbreak and invasion regions, and may be launched in neighboring areas in Uruguay, Paraguay and perhaps Brazil (BHA/TPQ, SENESA, Argentina).

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

In **Mexico**, patches of the Giant Grasshopper, *Tropidacris cristata* were observed in coffee crops (Pech).

Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Caucasus and Central Asia (CCA):

No update was received for July at the time this bulletin was compiled, but the FAO-PPPD forecast for July was CAUTION for Armenia (CIT), Kyrgyzstan (DMA and CIT), Azerbaijan and Uzbekistan (CIT and LMI), Kazakhstan and Russian Federation (DMA, CIT and LMI), and DANGER for

Georgia (CIT). A late received update indicated continued DMA fledging, mating and egg-laying in most of CCA except in the southern Central Asia region where it has ended its lifecycle during June. CIT that began fledging in Georgia and in Central Asian is expected to have continued developing while LMI hoppers that continued developing in Azerbaijan, Kazakhstan, Russian Federation and Uzbekistan during June are expected to have continued and some fledging.

Forecast: DMA, CIT and LMI will likely continue further developing in some countries in the regions during this month and control operations continued (BHA/TPQ) <http://www.fao.org/locusts-cca/en/>

Fall armyworm (FAW): FAW outbreaks were reported in irrigated maize in Midlands and Mashonaland Central Provinces of Zimbabwe. Updates were not received in other countries at the time this bulletin was compiled, however, it is likely the pest continued its presence affecting rainfed and irrigated maize and other [cereal] crops across countries and regions (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, the Pacific Regions and elsewhere during the forecast period. *Active monitoring, surveillance, reporting, and timely interventions remain critical to abate any major crop damage (BHA/TPQ).*

NOTE: The Food and Agriculture Organization of the United Nations (FAO) proposed 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

Not suitable Marginal Suitable Highly suitable
0 10 20 30 40 50 60 70 80 90 100



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

REUTERS

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.



(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 its primary outbreak areas or invasion areas during this month (BHA/TPQ, IRLCO-CSA).

Forecast: Significant AAW appearance is not likely during the forecast period (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 outbreaks were reported in Meru County in Kenya and Matebeleland North Province of Zimbabwe where control operations were being planned at the time this bulletin was compiled. No report was received in other countries, but it is likely the pest is being a problem to small grain cereal

growers across regions (BHA/TPQ, IRLCO-CSA).

Forecast: QSP outbreaks are likely to continue being a problem to small grain growers in Busia, Siaya, Kisumu, Narok, Nakuru, Uasin Gishu, Meru and Kirinyaga counties of Kenya; Morogoro, Arusha and Kilimanjaro Regions of Tanzania, and several other rainfed and/or irrigated small grain cereal growers across counties, regions, etc. (BHA/TPQ, IRLCO-CSA).

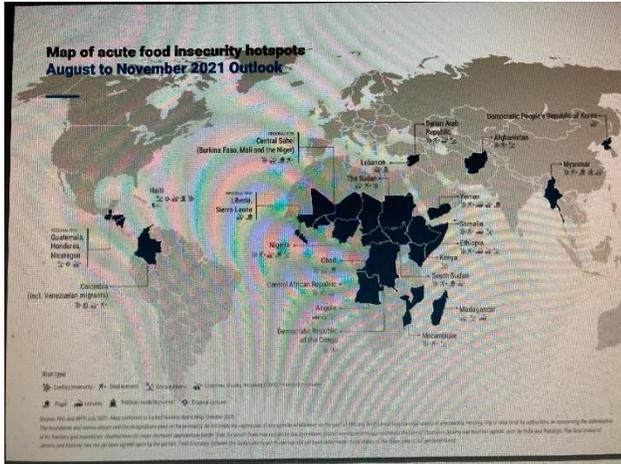
Facts: QSP can travel ~100 km/day in search of food. An adult QSP can consume 3-5 grams of small grain and destroy the same amount each day. A medium density QSP colony can contain up to a million or more birds and is capable of consuming and destroying 6,000 kg to 10,000 kg of seeds/day – amount enough to feed 12,000-20,000 people/day (TPQ/ P&PM).

Rodents: No update was received for this month, but it is likely that the pest continues being a problem to pre- and post-harvest crops and produce (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 (an 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 also 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**



BHA’s Contributions to ETOP Abatement Interventions

USAID/BHA/TPQ is supporting an operational research through a DRR with Arizona State University to develop a tool to manage the Senegalese grasshopper (OSE).

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 Canaries 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.

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.

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 issues - 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 July, 31,610 ha in total were treated compared to 89,722 ha in June (55 ha in Djibouti, 50 ha in Egypt, 3,788 ha in Ethiopia, 30 ha in Morocco, 27,162 ha in Somali and 525 ha in Sudan).

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

Country	Quantity, l/kg*
Algeria	1,186,034~
Chad	34,100
Egypt	10,253 ULV, 45,796~
Eritrea	14,150~
Ethiopia	110,543~
Libya	24,930~
Kenya	
Madagascar	206,000~ + 100,000 ^D
Mali	3,540~
Mauritania	39,803~
Morocco	3,412,374 ^D
~Niger	75,701~
Oman	5,000
Saudi Arabia	23,379~
Senegal	156,000~
Somalia	
Sudan	103,482~
South Sudan	
Tunisia	62,200 obsolete
Uganda	
Yemen	10,000; 180 kg GM

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

~ data may not be current.

^D = Morocco donated 100,000 l of pesticides to Madagascar and 10,000 l to Mauritania in 2015 through triangulation

^D = In 2013 Morocco donated 200,000 l to Madagascar

^D = Saudi donated 10,000 to Yemen and pledged 20,000 l to Eritrea

^{DM} = Morocco donated 30,000 l of pesticides to Mauritania

GM = *GreenMuscle*TM (fungal-based biological pesticide, e.g., NOVACRID)

LIST OF ACRONYMS

AAW	African armyworm (<i>Spodoptera exempta</i>)	DDLC	Department of Desert Locust Control
AELGA	Assistance for Emergency Locust Grasshopper Abatement	DLCO-EA	Desert Locust Control Organization for Eastern Africa
AFCS	Armyworm Forecasting and Control Services, Tanzania	DLMCC	Desert Locust Monitoring and Control Center, Yemen
AfDB	African Development Bank	DMA	<i>Dociostaurus maroccanus</i> (Moroccan Locust)
AGRA	Agricultural Green Revolution in Africa	DPPQS	Department of Plant Protection and Quarantine Services, India
AME	<i>Anacridium melanorhodon</i> (Tree Locust)	DPV	Département Protection des Végétaux (Department of Plant Protection)
APLC	Australian Plague Locust Commission	ELO	EMPRES Liaison Officers –
APLC	Australian Plague Locust Commission Bands groups of hoppers marching pretty much in the same direction	EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa	EOR	Eastern SGR Outbreak Region
BHA	Bureau for Humanitarian Assistance	ETOP	Emergency Transboundary Outbreak Pest
CABI	Center for Agriculture and Biosciences International	Fledgling	immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully developed reproductive organs to breed
CAC	Central Asia and the Caucasus	GM	GreenMuscle® (a fungal-based biopesticide); NOVACRID, Green Guard
CBAMFEW	Community-based armyworm monitoring, forecasting and early warning	ha	hectare (= 10,000 sq. meters, about 2.471 acres)
CERF	Central Emergency Response Fund	ICAPC	IGAD's Climate Prediction and Application Center
CIT	<i>Calliptamus italicus</i> (Italian Locust)	IGAD	Intergovernmental Authority on Development (Horn of Africa)
CLCPRO	Commission de Lutte Contre le Criquet Pélerin dans la Région Occidentale (Commission for the Desert Locust Control in the Western Region)	IRIN	Integrated Regional Information Networks
CNLA(A)	Centre National de Lutte Antiacridienne (National Locust Control Center)	IRLCO-CSA	International Red Locust Control Organization for Central and Southern Africa
COR	Central SGR Outbreak Region	ITCZ	Inter-Tropical Convergence Zone
CPD	Crop Protection Division	ITF	Inter-Tropical Convergence Front = (ITCZ)
CRC	Commission for Controlling Desert Locust in the Central Region	FAO-DLIS	Food and Agriculture Organizations' Desert Locust Information Service
CTE	<i>Chortoicetes terminifera</i> (Australian plague locust)		

- Hoppers young, wingless
locusts/grasshoppers (Latin
synonym = nymphs or larvae)
- JTWC Joint Typhoon Warning Center
- Kg Kilogram (~2.2 pound)
- L Liter (1.057 Quarts or 0.264 gallon
or 33.814 US fluid ounces)
- LCC Locust Control Center, Oman
- LMC *Locusta migratoriacapito* (Malagasy
locust)
- LMI *Locusta migratoria migratorioides*
(African Migratory Locust)
- LPA *Locustana pardalina*
- MoAFSC Ministry of Agriculture, Food
Security and Cooperatives
- MoAI Ministry of Agriculture and
Irrigation
- MoARD Ministry of Agriculture and
Rural Development
- NALC National Agency for Locust Control
- NCDLC National Center for the
Desert Locust Control, Libya
- NOAA (US) National Oceanic and
Aeronautic Administration
- NPS National Park Services
- NSD Republic of North Sudan
- NSE *Nomadacris septemfasciata* (Red
Locust)
- OFDA Office of U.S. Foreign Disaster
Assistance
- PBB Pine Bark Beetle (*Dendroctonus sp.*
– true weevils)
- 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 *Quelea species* (Red Billed *Quelea*
bird)
- SARCOF Southern Africa Region
Climate Outlook Forum
- SCA *Schistocerca cancellata* (South
American Locust)
- SFR *Spodoptera frugiperda* (SFR) (Fall
armyworm (FAW))
- SGR *Schistoseca gregaria* (the Desert
Locust)
- SPI *Schistocerca piceifrons piceiferons*
(Central American Locust)
- SSD Republic of South Sudan
- SPB Southern Pine Beetle
(*Dendroctonus frontalis*) – true
weevils
- SWAC South West Asia DL Commission
- PBB Pine Bark Beetle
- PSPM Preparedness, Strategic Planning
and Mitigation (formerly known as
Technical Assistance Group - TAG)
- TPQ Technical Program and Quality
Triangulation The process whereby
pesticides are donated by a
country, with large inventories, but
often no immediate need, to a
country with immediate need with
the help of a third party in the
negotiation and shipments, etc.
Usually, FAO plays the third-party
role in the case of locust and other
emergency pests.
- UF University of Florida
- USAID the United States Agency for
International Development
- UN the United Nations
- WOR Western SGR Outbreak Region
- ZEL *Zonocerus elegans*, the elegant
grasshopper
- ZVA *Zonocerus variegatus*, the
variegated grasshopper, is
emerging as a relatively new dry
season pest, largely due to the
destruction of its natural habitat
through deforestation, land
clearing, etc. for agricultural and
other development efforts and due
to climate anomalies

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To learn more about our activities and programs, please, visit our website:
<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>

Additional resources on SGR and other ETOPs

SGR
USAID Pest Monitoring:
<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>

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/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/5rxlpXEK5g8>

AAW

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

FEWS NET

<https://fews.net/>

NOAA CPC

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