

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

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹): In the central outbreak region (COR), the locust situation subsided throughout the outbreak areas in Somali and Ethiopia where aggressive surveillance and targeted control operations over the past months coupled with unfavorable ecological conditions effectively reduced locust presence during January (treated 2,741 ha in Somalia and 480 ha in Egypt) in . In Sudan, SGR situation remained calm and only a few copulating solitary adults and low-density hoppers were detected in winter breeding areas. In Yemen, solitary adults were reported in coastal areas. No locusts were detected in other countries in the Red Sea region. The locust situation remained generally calm in the western outbreak region (WOR) where a few isolated adults were reported. No locusts were reported in the eastern outbreak region (EOR) during this month.

Forecast: In COR, limited breeding on small-scale is likely in a few areas along the Red Sea coast in southeast Egypt, Sudan, northern Eritrea, Saudi Arabia, and Yemen and the Gulf of Aden coast of Yemen and northwest Somalia. Significant development is not expected during the forecast period. Regardless, routine monitoring is recommended to avert any undetected development. In WOR, small-scale breeding could occur in Morocco, but significant development is unlikely during the forecast period in the region. In EOR, isolated adults are likely to appear and start breeding on a small-scale in southeast Iran and southwest Pakistan, but significant development is no likely during the forecast period.

Red (Nomadic) Locust (*Nomadacris septemfasciata*) (**NSE**): NSE situation remained relatively calm and only hopper band formation was expected in the Lake Chilwa/Lake Chiuta plains and Mpatsanjoka Dambo in Malawi; Ikuu-Katavi, Malagarasi, Rukwa plains and Bahi Valley in Tanzania; Kafue Flats in Zambia; BuziGorongosa and Dimba plains in Mozambique.

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

Malagasy locust (*Locust migratoria capito* – **LMC**): Aerial survey and control operations began in the Ihosy region where 4th and 5th instar hoppers and young adults were in the solitarious-transient phase, but no update was received during this month.

¹ 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 remained calm in the CCA regions.

Fall Armyworm (*Spodoptera frugiperda*, J. E. Smith) (FAW): High to moderate infestations of FAW were reported affecting young maize in Zambia, Malawi and Zimbabwe. Control operations were carried out by the affected farmers with materials and technical assistance from the Ministries of Agriculture. Infestations were also expected to have occurred elsewhere in SSA and other countries, but updates were not received.

African Armyworm (AAW) (*Spodoptera exempta*): AAW outbreaks were reported in Tanzania (Kilosa and Babati Districts) and Zimbabwe (Mashonaland Central Province).

Quelea spp. (QSP): QSP outbreaks were reported in Laikipia County in Kenya, in Midland Province in Zimbabwe and in Kilimanjaro Region in Tanzania where control operations were under preparation at the time this bulletin was compiled.

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), la situation acridienne s'est calmée dans l'ensemble des zones de résurgence en Somalie et en Éthiopie où une surveillance

agressive et des opérations de lutte ciblée au cours des derniers mois, associées à des conditions écologiques défavorables, ont effectivement réduit la présence acridienne en janvier (traité 2 741 ha en Somalie et en 480 ha en Egypte) en. Au Soudan, la situation du SGR est restée calme et seuls quelques ailés solitaires en accouplement et des larves à faible densité ont été détectés dans les zones de reproduction hivernale. Au Yémen, des ailés solitaires ont été signalés dans les zones côtières. Aucun criquet n'a été détecté dans les autres pays de la région de la mer Rouge. La situation acridienne est restée généralement calme dans la région ouest de la résurgence (WOR) où quelques ailés isolés ont été signalés. Aucun Criquet pèlerin n'a été signalé dans la région orientale de la résurgence (EOR) au cours de ce mois.

Prévisions: Dans le COR, une reproduction limitée à petite échelle est probable dans quelques zones le long de la côte de la mer Rouge dans le sud-est de l'Égypte, au Soudan, dans le nord de l'Érythrée, en Arabie saoudite et au Yémen et sur la côte du golfe d'Aden au Yémen et au nord-ouest de la Somalie. Aucun développement significatif n'est attendu au cours de la période de prévision. Quoiqu'il en soit, une surveillance de routine est recommandée pour éviter tout développement non détecté. Dans la région WOR, une reproduction à petite échelle pourrait avoir lieu au Maroc, mais un développement significatif est peu probable au cours de la période de prévision dans la région. Dans la région EOR, des ailés isolés vont probablement apparaître et commencer à se reproduire à petite échelle dans le sud-est de l'Iran et le sud-ouest du Pakistan, mais un développement significatif n'est pas probable au cours de la période de prévision.

Criquet nomade (*Nomadacris septemfasciata*) (NSE): La situation en NSE est restée relativement calme et seule la formation de bandes larvaires était attendue dans les plaines du lac Chilwa/lac Chiuta et à Mpatsanjoka Dambo au Malawi; Ikuu-Katavi, Malagarasi, les plaines de Rukwa et la vallée de Bahi en Tanzanie; Kafue Flats en Zambie; Plaines de BuziGorongosa et Dimba au Mozambique.

Criquet migrateur africain: *Locusta migratoria migratorioides* (LMI): Des populations isolées de LMI ont persisté dans les plaines de Simalaha dans la province occidentale en Zambie.

Criquet migrateur capito, (LMI-C): Les opérations de prospection aérienne et de lutte ont commencé dans la région d'Ihoso où les larves des stades 4 et 5 et les jeunes adultes étaient en phase solitaire-transitoire, mais aucune mise à jour n'a été reçue au cours de ce mois.

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 du DMA, du CIT et du LMI devraient avoir pris fin dans les régions du CCA.

Chenille Légionnaire d'automne (*Spodoptera frugiperda*, J. E. Smith) (FAW): Des infestations légères à modérées de FAW ont été signalées affectant le jeune maïs au Malawi, dans la province du Mashonaland au Zimbabwe et dans le comté de Kisii au Kenya. Les opérations de lutte ont été menées par les agriculteurs touchés avec l'aide des Ministères de l'Agriculture. Aucun rapport n'a été reçu d'autres pays, mais des infestations légères à élevées devraient se produire ailleurs dans les régions touchées.

Chenille Légionnaire africaine (AAW) (*Spodoptera exempta*): Des infestations élevées à modérées de AAW ont été signalées affectant le jeune maïs en Zambie, au Malawi et au Zimbabwe. Les opérations de lutte ont été menées par les agriculteurs concernés avec le matériel et l'assistance technique des Ministères de l'Agriculture. On s'attendait également à ce que des infestations se soient produites ailleurs en ASS et dans d'autres pays, mais aucune mise à jour n'a été reçue.

***Quelea spp. oiseaux* (QSP):** QSP outbreaks were reported in Laikipia County in Kenya, in Midland Province in Zimbabwe and in Kilimanjaro Region in Tanzania where control operations were under preparation at the time this bulletin was compiled.

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

In COR, light rains fell in northwest Red Sea coast of KSA and along central and southern coast of Sudan during early January. No significant rain was reported thereafter in the along both sides of the Red Sea and Gulf of Aden. Ecological conditions were favorable in coastal areas of Egypt and northeast Sudan and Tokar Delta extending south near the Eritrean border. Conditions were less favorable in the eastern side of the Red Sea and limited to small areas on the coast near Rabigh, Quinfidah and Jizan in KSA and near Al Zuhrah in Yemen where vegetation drying out in many areas. Breeding conditions were slightly better along the Gulf of Aden coast where vegetation is green, and soil is moist west of Aden to Ahwar. Significant rain was not recorded in the Horn of Africa and ecological conditions continued to dry out. During the 2nd dekad of January, normal rain fell for three consecutive days in southern Oromia (Borena Zone) and the Rift Valley in SNNP Regions.

In WOR, ecological conditions are generally favorable for the reproduction and survival of the SGR along Oued Draa and in some areas in Oued Sakia El Hamra in Morocco.

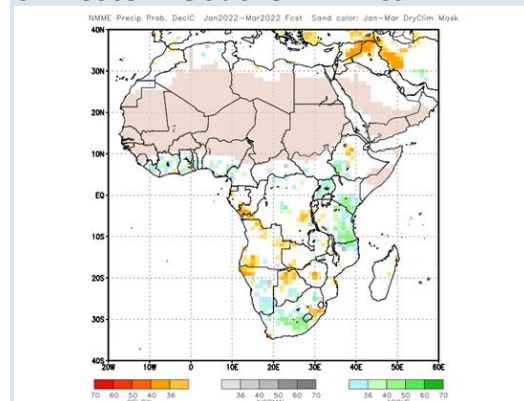
In EOR, dry and unfavorable conditions persisted during December.

Most of the NSE outbreak regions received normal to above normal rainfall (535.6 mm in Namwala, Kafue Flats in Zambia; 258.1 mm in Kaliua in Malgarasi Plain, 214.0 mm in Muze Rukwa Valley and 169.0 mm in Masenge, Wembere Plain in Tanzania. Moderate rainfall was also reported in several places in Mozambique: 79.0 mm in Mafambisse (Buzi plain), 67.0 mm in Gorongosa (Gorongosa plain), 75 mm in Caia (Dimba plains), and 66 mm in Buzi in Mozambique.

CCA Region: In the CC region, unfavorable weather condition continued during January.

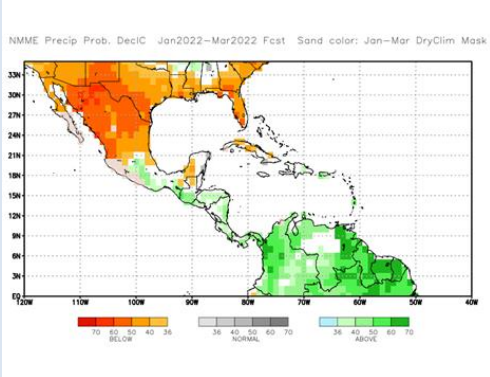
Weather forecast through January to March 2022 (NOAA, 12/21)

The forecasts call for a slight to tilt in the odds to favor above-average rainfall over local areas in the Greater Horn of Africa during the NH winter 2022. There is also a slight to moderate tilt in the odds to favor above-average rainfall over portions of western Southern Africa.

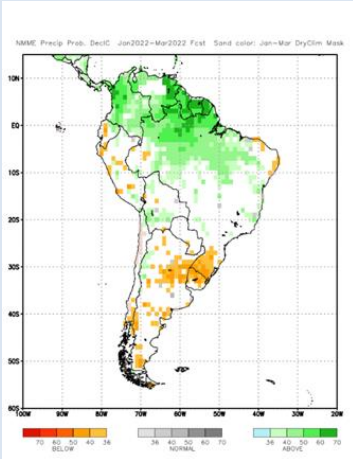


There is a slight to moderate tilt in the odds to favor below-average rainfall over Mexico and parts of the Caribbean in

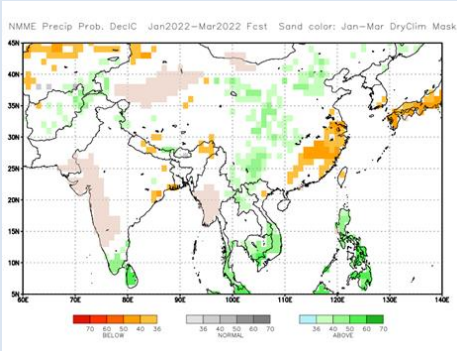
Central America.



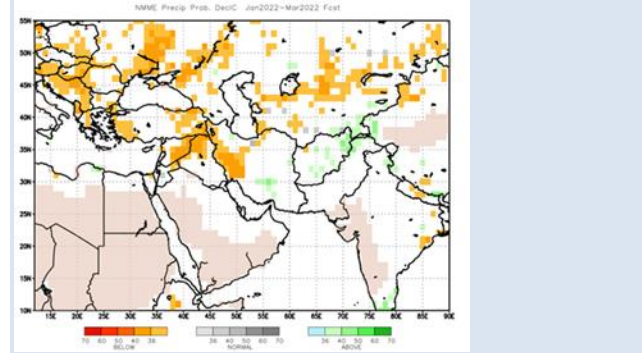
The forecasts call for a moderate tilt in the odds to favor above-average rainfall over northern South America.



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 southern Kazakhstan during the spring of 2022.

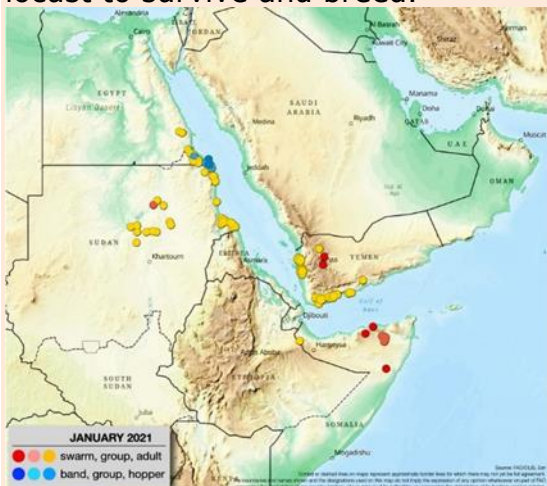


ETOP proliferation vis-a-vis climate factors

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 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 **End note.**

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

The **Desert Locust** (*Schistoseca gregaria* - **SGR**²): In COR, the SGR situation widely declined across the Horn of Africa due to unfavorable conditions and continued aggressive control operations. In Ethiopia, ground and aerial survey operations continued in Southeastern parts of Somali region, Southern parts of Oromia and in the Rift Valley region in Southern Nation, Nationalities and Peoples' (SNNPR) regions, but no locusts were detected. Continued seasonal dry spell in Southeastern parts of Somali region, Southern Oromia and SNNPR Regions caused unfavorable conditions for locust to survive and breed.



SGR situation FAO-DLIS, 2/22
 In Somalia, aerial control operations against immature swarms in the northeast treated 2,741 ha before it ended on January 4th due to absence of target populations. No locusts were reported in Ethiopia or Kenya, and no reports of southerly migration of swarms from Somalia to Ethiopia or Kenya.

In Sudan, SGR situation remained calm during January. Survey covered summer

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

and winter breeding areas in the Red Sea, River Nile, and Northern States. Copulating solitary adults and a few low-density 2nd to 4th instar hopper groups were detected in winter breeding areas in the southern and northern coasts, respectively. In summer breeding areas, a few immature and mating adults were detected near irrigation schemes near Abu Hamed in the River Nile State. Elsewhere, scattered low density mature/immature solitary adults were detected in several locations. Most of the surveyed areas were found greening in winter breeding areas, but dry in summer breeding areas, exception the River Nile banks and irrigated areas.

In Yemen, a few solitary adults were reported in coastal areas. No locusts were detected in Oman and no locusts were reported in Egypt, Eritrea, or SA during this month.

Forecast: In COR, breeding is likely on small-scale in a few areas along the Red Sea coast in southeast Egypt, Sudan, northern Eritrea, Saudi Arabia, and Yemen and the Gulf of Aden coast of Yemen and northwest Somalia. Although significant development is not expected during the forecast period, routine monitoring is recommended to avert any undetected development. Coastal areas along both sides of the Red Sea in southeast Egypt, Sudan, Eritrea, Yemen, and Saudi Arabia, and both sides of the Gulf of Aden will likely experience small-scale breeding due to poor rain. Some swarms from northeast Somalia likely move westward into Somaliland in areas of recent rainfall; strong northerly winds may push some immature swarms southward into eastern Ethiopia.

SGR – WOR: Ecological conditions remained unfavorable across most of WOR, and only isolated solitary mature

adult locusts were observed in some localities along Oued Draa and in the Adrar Settouf in Morocco where ecological conditions are favorable. Although ecological conditions are favorable in some breeding locations in Mali, locust presence was not reported during the month. No locusts were reported in Chad, Libya, and Tunisia during this month.

Forecast: In WOR, the SGR situation will likely remain generally calm during the forecast period although some isolated adults are present in some places where ecological conditions are favorable south of the Atlas Mountains in Morocco and may begin breeding during the forecast period in spring.

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

Forecast: In EOR, small-scale breeding may begin during February and March in the spring breeding areas in southeast Iran and southwest Pakistan where rainfall was reported in January.

NOTE: *Though at an early 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 situation remained relatively calm during the month. However, hatching and hopper formation was expected to have taken place in Lake Chilwa/ Lake Chiuta plains, Mpatsanjoka Dambo in Malawi; Kafue Flats, in Zambia; Iku-Katavi plains, Bahi Valley, Malagarasi Basin, Rukwa Valley in Tanzania; Buzi Gorongosa, Dimba plains in Mozambique where ecological conditions have begun improving from the recent rainfall. Routine surveillance and necessary control operations require resources.

Forecast: Low to medium size NSE hoppers and bands are likely to form in the outbreak areas in Ikuu-Katavi, Rukwa plains, Wembere plains and Malagarasi Basin in Tanzania; Buzi and Dimba plains in Mozambique; and Lake Chilwa/Lake Chiuta plains in Malawi and the Kafue Flats in Zambia prior to the seasonal rains where significant residual parental populations persisted. IRLCO-CSA is exploring for resources to be able to carry out survey and undertake control as often as needed.

African Migratory Locust (LMI): Isolated population of LMI persisted in Simalaha Plains in Western Province of Zambia, but additional info was not available at the time the Bulletin was compiled. No report was received from other countries or elsewhere in the region.

Forecast: LMI outbreaks in Southern and Western Provinces of Zambia is likely. MoAs are encouraged to ensure timely surveillance, reporting and necessary interventions remain critical to avoid any major threats.

Malagasy locust (*Locust migratoria capito* – LMC): No update was received at the time this bulletin was compiled. However, the Malagasy Migratory Locust campaign that began earlier is expected to have continued. FAO is supporting campaign coordination, training on locust survey and management, control techniques, maintenance and safety measures. Earlier, aerial survey and control operations detected 4th and 5th instar hoppers and young adults in the Ihosy region.

BHA/TPQ will continue monitoring the situation in collaboration with FAO and field staff and provide updates and advice.

Forecast: Locusts will continue developing in the primary outbreak areas and control operations remain critical in the coming months. Rainfall from Cyclone Batsirai will likely improve conditions for locusts to develop and breed.

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, the pest may be present in the region.

[**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): No update was received at the time this bulletin was compiled.

<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, no locust activities are expected during this time.

Forecast: Locust activities will remain calm during the forecast period.

Fall armyworm (FAW): FAW infestations were reported in all the 10 Provinces of Zambia where 96,222 ha were reported affected. In Malawi, high pest infestations were reported in young maize plants in Thyolo, Mulanje and Phalombe districts of Blantyre Agriculture development Division. Moderate infestation was reported in Mashonaland East, Central, and Midlands Provinces in Zimbabwe. Affected farmers carried out control with technical and material assistance from MoA. FAW infestations were also likely to have caused mild damage to young maize in Kenya, Tanzania, and Mozambique.

Forecast: FAW is likely to continue affecting rain-fed and/or irrigated maize and other 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 and pasture.

Global Action for Fall Armyworm

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).

BHA/TPQ is working closely with various partners on 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.

FAO released its seventh issue of the bi-monthly newsletter on the Fall Armyworm Control in Action ([FAW Secretariat, Global](#)

[Action on FAW Control](#)). The newsletter provides key stakeholders the latest updates on the FAO-led Global Action against 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 outbreak was reported in Kilosa and Babati districts in Manyara region as well as Tanga, Mtwara and Lindi regions in Tanzania. The pest was reported attacking maize and sorghum and threatening pasture. Logistical support is being provided by the MoA. High infestations of AAW were also reported in Muzarabani in Mashonaland Central, Zimbabwe. Line Ministries provided pesticides and technical assistance to the affected farmers to carry out control. It is to be recalled that during December moth catches were reported in Mashonaland Central and West Provinces in Zimbabwe. AAW was reported for the first time in years.

Forecast: There is possibility of AAW outbreaks to continue attacking maize and other crops in Tanzania and Zimbabwe. Active monitoring and timely

interventions remain critical to prevent any major damage.

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 Midlands Province in Zimbabwe where control was carried out by The Zimbabwe Parks and Wildlife Management Authority. Flocks persisted in Laikipia County in Kenya, and in Moshi and Mwanza districts in Kilimanjaro region in Tanzania. Arrangements to carry out control operations were under way in the affected countries.

Forecast: QSP outbreaks are likely to continue being a problem to small grain cereal growers across different regions in Kenya, Tanzania, Zimbabwe and elsewhere.

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 updates were 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.

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 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 January aerial and ground operations treated some 3,221 ha in total (2,741 in Somalia and 480 in Egypt), the lowest number of ha treated in a month in nearly two years since the current outbreak began.

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 ^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
<p>*Includes different pesticides and formulations - ULV, EC and dust.</p> <p>~ data may not be current.</p> <p>^D = Morocco donated 100,000 l of pesticides to Madagascar and 10,000 l to Mauritania in 2015 through triangulation</p> <p>^D = In 2013 Morocco donated 200,000 l to Madagascar</p> <p>^D = Saudi donated 10,000 to Yemen and pledged 20,000 l to Eritrea</p> <p>^{DM} = Morocco donated 30,000 l of pesticides to Mauritania</p> <p>GM = <i>GreenMuscle</i>TM (fungal-based biological pesticide, e.g., NOVACRID)</p>	

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	MoARD	Ministry of Agriculture and Rural Development
EOR	Eastern SGR Outbreak Region	NALC	National Agency for Locust Control
ETOP	Emergency Transboundary Outbreak Pest	NCDLC	National Center for the Desert Locust Control, Libya
Fledgling	immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully developed reproductive organs to breed	NOAA (US)	National Oceanic and Aeronautic Administration
GM	GreenMuscle® (a fungal-based biopesticide); NOVACRID, Green Guard	NPS	National Park Services
ha	hectare (= 10,000 sq. meters, about 2.471 acres)	NSD	Republic of North Sudan
ICAPC	IGAD's Climate Prediction and Application Center	NSE	Nomadacris septemfasciata (Red Locust)
IGAD	Intergovernmental Authority on Development (Horn of Africa)	OFDA	Office of U.S. Foreign Disaster Assistance
IRIN	Integrated Regional Information Networks	PBB	Pine Bark Beetle (<i>Dendroctonus</i> sp. – true weevils)
IRLCO-CSA	International Red Locust Control Organization for Central and Southern Africa	PHD	Plant Health Directorate
ITCZ	Inter-Tropical Convergence Zone	PHS	Plant Health Services, MoA Tanzania
ITF	Inter-Tropical Convergence Front = ITCZ)	PPD	Plant Protection Department
FAO-DLIS	Food and Agriculture Organizations' Desert Locust Information Service	PPM	Pest and Pesticide Management
Hoppers	young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)	PPSD	Plant Protection Services Division/Department
JTWC	Joint Typhoon Warning Center	PRRSN	Pesticide Risk Reduction through Stewardship Network
Kg	Kilogram (~2.2 pound)	QSP	<i>Quelea</i> species (Red Billed <i>Quelea</i> bird)
L	Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)	SARCOF	Southern Africa Region Climate Outlook Forum
LCC	Locust Control Center, Oman	SCA	<i>Schistocerca cancellata</i> (South American Locust)
LMC	<i>Locusta migratoriacapito</i> (Malagasy locust)	SFR	<i>Spodoptera frugiperda</i> (SFR) (Fall armyworm (FAW))
LMI	<i>Locusta migratoria migratorioides</i> (African Migratory Locust)	SGR	<i>Schistoseca gregaria</i> (the Desert Locust)
LPA	<i>Locustana pardalina</i>	SPI	<i>Schistocerca piceifrons piceiferons</i> (Central American Locust)
MoAFSC	Ministry of Agriculture, Food Security and Cooperatives	SSD	Republic of South Sudan
MoAI	Ministry of Agriculture and Irrigation	SPB	Southern Pine Beetle (<i>Dendroctonus frontalis</i>) – true weevils
		SWAC	Southwest 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

Point of Contact:

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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/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>