Emergency Transboundary Outbreak Pest (ETOP) Situation Bulletin for May with a forecast through mid-July 2021

résumé en français est inclus

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**[1]): There was a significant decline in locust numbers in the Central Outbreak Region (COR), in Ethiopia and Somalia during April largely due to intensive control and delayed rains, however, the situation began changing in May as good rains that created favorable conditions for locusts to mature and begin breeding. Egg laying, hatching and hopper and band formations progressed over vast areas in eastern Ethiopia and Somalia and control operations treated 12,663 ha and 18,304 ha, in the two countries, respectively during May. In Djibouti, a couple of swarms were observed laying eggs, but control operations were not necessitated. No locusts were reported in Eritrea, Kenya, Oman, or Tanzania during this month. A significant decline was observed on the Red Sea coast of Sudan and just 2,868 ha were treated in May. Swarms from Saudi Arabia that invaded Syria, Iraq, Jordan, Lebanon, and Israel bred and caused hopper and group formations and control operations treated a few ten to a few hundred ha during May. Mature adult groups were controlled in some 20 ha in Sinai, Egypt. Hopper groups and bands were fledging and forming immature adult groups in the interior Saudi Arabia and controlled on 11,156 ha during the month. Some swarms from the interior of Saudi Arabia began moving south towards northern Yemen and will likely begin breeding in the interior of the country where ecological conditions are expected to have begun improving from good rains that fell and flooding earlier. In the Western Outbreak Region (WOR), limited breeding was reported in Algeria and control operations treated 32 ha near irrigated areas; some scattered adults were also detected in northeast Morocco, but overall, the region remained calm during this month. In the Eastern Outbreak Region (EOR), hatching and hopper and group formations continued in southwest Iran and control operations treated 6,370 ha, but no locusts were reported elsewhere in the region during May. http://www.fao.org/ag/locusts/en/info/info/index.html

Forecast: In COR, more hatching and band formation will continue in eastern Ethiopia and northern Somalia and cause fledging and swarm formation from late June onwards. In Kenya, localized breeding is likely [from undetected locusts] in the northern part of the country. A few small escapee locusts could for groups in Iraq, Jordan, Syria, and Lebanon, and move south. Immature adult groups and perhaps a few small swarms may form in the interior of Saudi Arabia and move south towards the interior of Yemen and begin breeding. Small-scale breeding is likely in summer breeding areas of Sudan and western lowlands in Eritrea at the

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

foothills of the seasonal rains. In EOR, adult groups could form in southwest Iran and move to summer breeding areas along the Indo-Pakistan borders where small-scale breeding will commence with the onset of monsoon rains sometime in July. In WOR, small-scale breeding may begin at the foothills of the summer rains in Sahel West Africa in Mauritania, Mali, Niger, and Chad, but significant developments are not likely during the forecast period.
http://www.fao.org/ag/locusts/en/info/info/index.html

Red (Nomadic) Locust (*Nomadacris septemfasciata*) **(NSE**): Freshly fledged low-density NSE populations were observed in Ikuu-Katavi and Bahi plains and isolated populations were detected in Malagarasi Basin, and Rukwa Valley and Wembere plains in Tanzania during May. Scattered populations were present in Nhamatanda District in Buzi-Gorongosa plains in Mozambique and a similar situation is expected in Lake Chilwa/ Lake Chiuta plains, and Mpatasanjoka in Malawi during this month.

African Migratory Locust: *Locusta migratoria migratorioides* ***(LMI)***: Various densities of LMI persisted in Western and Southern Provinces in Zambia.

Tree Locusts, *Anacridium spp. (ASP):* There was no report of ASP during May.

Central American Locust, *Schistocerca piceiferons* **(SPI**)(CAL): CAL is expected to have begun hatching in the foothills of the seasonal rains, particularly in Central America.

South American Locust, *Schistocerca cancellata* **(SCA**): SCA activities are expected to have begun in Argentina and adjacent areas during the month.

Italian (*CIT*), Moroccan (*DMA*), and **Asian Migratory Locusts (*LMI*)**: No update was received on DMA, CIT or LMI during this month, but DMA is expected to gradually begin hatching in the southern CAC region.

Fall Armyworm *(Spodoptera frugiperda)* ***(FAW)***: FAW attack was reported in irrigated and late planted rainfed maize in Malawi, Tanzania, Zambia, and Zimbabwe. A similar situation is expected in other maize growing regions across countries and regions.

African Armyworm (AAW) (*Spodoptera exempta*): AAW outbreaks were not reported during this month.

Quelea spp. (**QSP**): QSP birds were reported damaging rice in Morogoro, Manyara, Singida and Coastal regions in Tanzania and in wheat in Meru and Narok Counties in Kenya.

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

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

RÉSUMÉ

La situation du Criquet pèlerin (*Schistoseca gregaria* - SGR): Il y a eu une baisse significative des effectifs acridiens dans la Région centrale des épidémies (COR), en Éthiopie et en Somalie en avril, en grande partie en raison de la lutte intensive et des pluies tardives. mûrir et commencer à se reproduire. La ponte, l'éclosion et la formation de larves et de bandes ont progressé sur de vastes zones dans l'est de l'Éthiopie et de la Somalie et les opérations de lutte ont traité respectivement 12 663 ha et 18 304 ha dans les deux pays en mai. A Djibouti, quelques essaims ont été observés en ponte, mais des opérations de lutte n'ont pas été nécessaires. Aucun criquet n'a été signalé en Érythrée, au Kenya, à Oman ou en Tanzanie au cours de ce mois. Un déclin significatif a été observé sur la côte soudanaise de la mer Rouge et seulement 2 868 ha ont été traités en mai. Des essaims d'Arabie saoudite qui ont envahi la Syrie, l'Irak, la Jordanie, le Liban et Israël se sont reproduits et ont provoqué des formations de larves et de groupes et les opérations de lutte ont traité quelques dizaines à quelques centaines d'hectares en mai. Des groupes d'ailés matures ont été contrôlés sur quelque 20 ha dans le Sinaï, en Égypte. Des groupes et bandes larvaires étaient en pleine mue imaginale et formaient des groupes d'ailés immatures dans l'intérieur de l'Arabie saoudite et ont été contrôlés sur 11 156 ha au cours du mois. Certains essaims de l'intérieur de l'Arabie saoudite ont commencé à se déplacer vers le sud vers le nord du Yémen et commenceront probablement à se reproduire dans l'intérieur du pays où l'on s'attend à ce que les conditions écologiques aient commencé à s'améliorer grâce aux bonnes pluies tombées et aux inondations plus tôt. Dans la région ouest de la flambée (WOR), une reproduction limitée a été signalée en Algérie et des opérations de lutte ont traité 32 ha près des zones irriguées; quelques ailés épars ont également été détectés dans le nord-est du Maroc, mais dans l'ensemble, la région est restée calme au cours de ce mois. Dans la région orientale du foyer (EOR), les éclosions et la formation de larves et de groupes se sont poursuivies dans le sud-ouest de l'Iran et les opérations de lutte ont traité 6 370 ha, mais aucun criquet n'a été signalé ailleurs dans la région en mai. http://www.fao.org/ag/locusts/en/info/info/index.html

Prévisions: Dans le COR, davantage d'éclosions et de formations de bandes se poursuivront dans l'est de l'Éthiopie et le nord de la Somalie et provoqueront des mues imaginales et la formation d'essaims à partir de la fin juin. Au Kenya, une reproduction localisée est probable [à partir de criquets non détectés] dans la partie nord du pays. Quelques petits criquets évadés pourraient rejoindre des groupes en Irak, en Jordanie, en Syrie et au Liban, et se déplacer vers le sud. Des groupes d'ailés immatures et peut-être quelques petits essaims peuvent se former dans l'intérieur de l'Arabie saoudite et se déplacer vers le sud vers l'intérieur du Yémen et commencer la reproduction. Une reproduction à petite échelle est probable dans les zones de reproduction estivale du Soudan et dans les basses terres occidentales de l'Érythrée, au pied des pluies saisonnières. En EOR, des groupes d'ailés pourraient se former dans le sud-ouest de l'Iran et se déplacer vers les zones de reproduction estivale le long des frontières indo-pakistanaises où une reproduction à petite échelle commencera avec le début des pluies de mousson en juillet. Dans le WOR, une reproduction à petite échelle peut commencer au pied des pluies estivales au Sahel en Afrique de l'Ouest en Mauritanie, au Mali, au Niger et au Tchad, mais des développements significatifs ne sont pas probables pendant la période de prévision.

Criquet nomade (*Nomadacris septemfasciata***) (NSE):** Des populations NSE de faible densité fraîchement écloses ont été observées dans les plaines d'Ikuu-Katavi et de Bahi et des populations isolées ont été détectées dans le bassin de Malagarasi, ainsi que dans la vallée de Rukwa et les plaines de Wembere en Tanzanie en mai. Des populations éparses étaient présentes dans le district de Nhamatanda dans les plaines de Buzi-Gorongosa au Mozambique et une situation similaire est attendue dans les plaines du lac Chilwa/lac Chiuta et à Mpatasanjoka au Malawi au cours de ce mois.

Criquet migrateur africain: *Locusta migratoria migratorioides* **(LMI):** Diverses densités de LMI ont persisté dans les provinces occidentales et méridionales de la Zambie.

Le criquet arborial, *Anacridium spp*: (ASP): Aucun rapport sur ASP au cours de ce mois.

Criquet Amérique centrale, *Schistocerca piceifrons piceiferons* (SPI): On s'attend à ce que le CAL ait commencé à éclore dans les contreforts des pluies saisonnières, en particulier en Amérique centrale.

Criquet d'Amérique du Sud, *Schistocerca cancellata* **(SCA**): les activités de la SCA devraient avoir commencé en Argentine et dans les zones adjacentes au cours du mois.

Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI): Aucune mise à jour n'a été reçue sur le DMA, le CIT ou le LMI au cours de ce mois, mais le DMA devrait progressivement commencer à éclore dans la région sud de la CAC.

Chenille Légionnaire d'automne (*Spodoptera frugiperda*) (FAW): Une attaque de la chenille légionnaire d'automne a été signalée dans du maïs pluvial irrigué et semé tardivement au Malawi, en Tanzanie, en Zambie et au Zimbabwe. Une situation similaire est attendue dans d'autres régions productrices de maïs à travers les pays et les régions.

Chenille Légionnaire africaine (AAW), *Spodoptera exempta*: AAW aucune épidémie d'AAW n'a été signalée au cours de ce mois.

***Quelea spp. oiseaux* (QSP):** Des oiseaux QSP ont été signalés endommageant le riz dans les régions de Morogoro, Manyara, Singida et côtières en Tanzanie et dans le blé dans les comtés de Meru et Narok 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

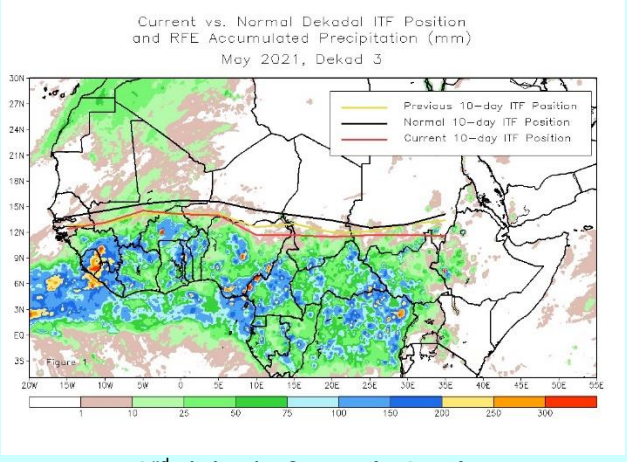
Note: *All ETOP Bulletins, including previous issues can be accessed and downloaded on USAID Pest and Pesticide Monitoring website:*
USAID Pest and Pesticide Monitoring

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

Weather and Ecological Conditions

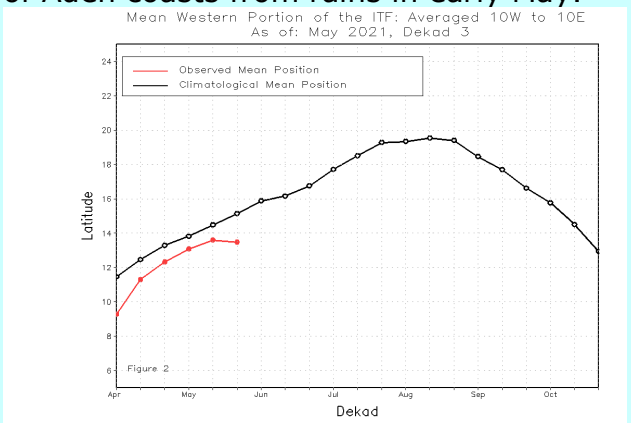
From 21-31 May, the Inter-Tropical Front (ITF) was between 15W-5E, like the previous dekad, with a slight move southward between 10E-35E. The western (10W-10E) portion of the ITF was located approximately at 13.5N, whereas the average position was centered at 15.1N. This abnormal position since the previous dekad caused below normal rainfall across the Gulf of Guinea countries. The eastern (20E-35E) portion of the ITF was located at 11.6N, i.e., 2.4 degrees south of the climatological position of 13.2N. This shift has led to below normal rainfall across central and further northern Nigeria, southern Chad,

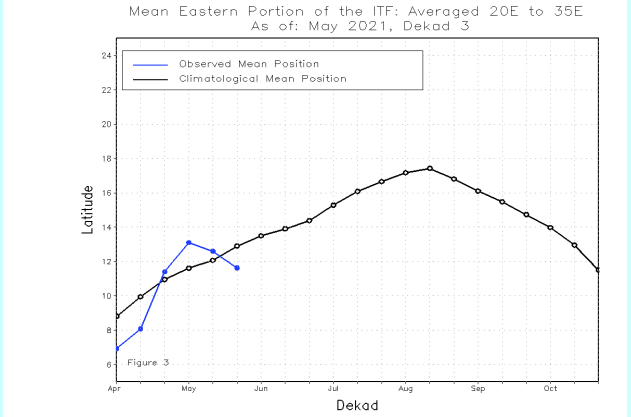
and southern Sudan. The below map shows the current position of the ITF relative to the long-term average position during the 3rd dekad of May and its previous position of the 2nd dekad of the month. Figures 2 and 3 are time series, illustrating the latitudinal values of the western and eastern portions of the ITF, respectively, and their seasonal evolution since the beginning of April 2021 (NOAA).



ITZ map, 3rd dekad of May (NOAA)

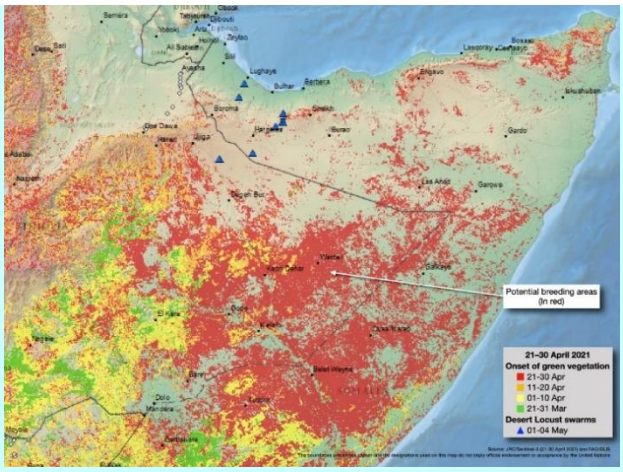
In COR, light to moderate rains fell over most of Ethiopia and Somalia during the first dekad, reaching the southern coast of Eritrea as well as coastal and interior areas of southwest Yemen. Lighter rains fell in the interior of Yemen. During the remainder of May, very little rain fell in the region except for light showers near Garowe in northeast Somalia during the 2nd dekad. Ecological conditions were favorable for breeding over a large and widespread area encompassing the Somali region in eastern Ethiopia from the Shebelle River to the plateau and escarpment in northern Somalia. In Saudi Arabia, conditions were drying out in the interior as temperatures increased during the month. In Yemen, ecological conditions were favorable for breeding in the interior where good rains and floods occurred in parts of Al Jawf, Marib, Shabwah, Hadhramaut and Al Mahrah governorates in April. Conditions may also be favorable on the Red Sea and Gulf of Aden coasts from rains in early May.





In Yemen, good rains caused floods in April in parts of Al Jawf, Marib, Shabwah, Hadhramaut and Al Mahrah governorates in the interior of the country causing ecological conditions to improve for breeding. Ecological conditions are expected to have improved on the Red Sea and Gulf of Aden coasts from rains that fell during early May (FAO-DLIS).

Rainfall on Bale Mountains, Oromia Regio Ethiopia (FAO)



The above map (FAO-DLIS) shows rainfall-induced vegetation development areas shown in red, green, and yellow, in eastern and southeastern Ethiopia and Somalia (FAO-DLIS) where potentially vast areas suitable for locust breeding and population increase over the coming months – these areas require active surveillance, monitoring and timely and intensive control operations to prevent rebirth of massive SGR development.

In **WOR**, little rain fell in WOR during May except for light showers in the Tenere Desert in northeast Niger and near Ghat in southwest Libya during the 1st dekad, the Adrar des Iforas in northern Mali during the 2nd dekad, and near the Mali/Algeria/Mauritania border during the 3rd dekad, but as such did not improve breeding conditions (CNLAA/Mauritania, CNLAA/Morocco, CNLP/Mali, FAO-DLIS, DPV/Tunisia NOAA).

In **EOR**, light rains fell in spring breeding areas in parts of southeast Iran and southwest Pakistan during the 1st dekad of May, but largely dry ecological conditions prevailed in most areas except for parts of the southwest coast near Bushehr. Light showers fell in summer breeding areas in some places along the Indo-Pakistan border during the 1st and 3rd third dekads of May. As a result of cyclone Tauktae, the 1st cyclone of this year and the strongest since 1998, and which brought heavy rain (114 and 119 mm) on the 18th and 19th of the month. The outer edge of the cyclone reached lower Sindh province in southeast Pakistan, causing high temperatures, dust storms and light rainfall (FAO-DLIS).

In the NSE region, dry weather prevailed in most of the outbreak areas, with vegetation drying up except in Mozambique where some rains were reported. Low temperatures were heralding onset of the cool season (NOAA, IRLCO-CSA).

CAC Region: The CAC region is expected to have remained cool and with less prescipitation.

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, despite significant decline in SGR activities in Ethiopia and Somalia as well as Kenya during April, largely due to intensive control and delayed seasonal rain, the situation changed in May with good rains that created favorable breeding conditions. Egg laying, hatching and hopper and band formations progressed over vast areas in eastern Ethiopia and Somalia and control operations treated 12,663 ha and 18,304 ha, respectively during May. In Djibouti, some swarms were observed laying eggs, but control operations were not necessitated. Locust numbers significantly declined on the Red Sea coast of Sudan and only 2,868 ha were treated during May. No locusts were reported in Eritrea, Kenya, or Tanzania during this month. Hopper groups and bands were fledging and forming immature adult groups in the interior Saudi Arabia where control operations treated 11,156 ha during this month. Some swarms from the interior of Saudi Arabia began moving south towards northern Yemen where very few scattered adults may be present and will likely begin breeding in the interior of the country with ecological conditions expected to have begun improving from good rains that fell earlier.

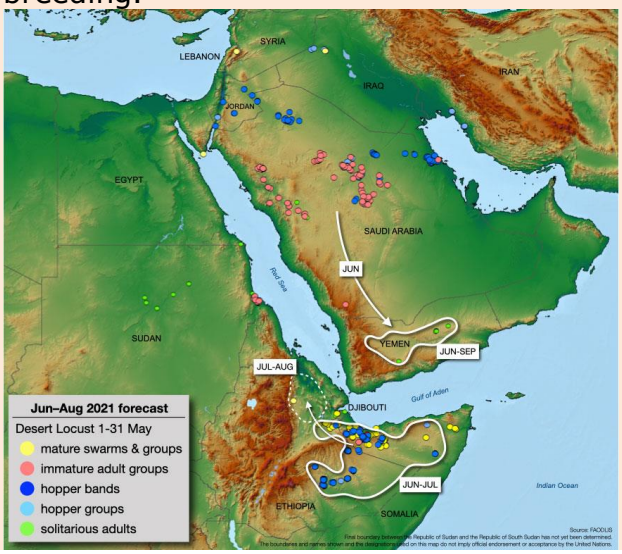
Aerial survey in Somalia, 2 June 2021, FAO-DLIS

Escapee swarms from Saudi Arabia that invaded Syria, Iraq, Jordan, Lebanon, and Israel bred and caused hopper and group formations necessitating control operations on a few ten to a few hundred ha during May. Mature adult groups were controlled in 20 ha in Sinai, Egypt. No locusts were reported in Oman or Tanzania in May (Oman (DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Eritrea, PPD/Ethiopia, PPD/Sudan, SPPV/Djibouti).

Forecast: In COR, more hatching and band formation will continue in eastern Ethiopia and northern Somalia and cause fledging and swarm formation from late June onwards. In Kenya, localized breeding is likely [from undetected locusts] in the northern part of the country. Aerial and ground teams need to intensify hopper detection and control and reduce infestations and formation of a new generation of immature swarms from late June onwards, which if unabated, will likely move to the Afar region in northeast Ethiopia in August and September. With the above normal to

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

normal rains in the forecast in the region, aggressive control and surveillance must be maintained against hoppers in their current location in eastern Ethiopia and Somalia to prevent spread of swarms to the Afar region, which if unabated, could further spread to eastern Amhara region. In Saudi Arabia immature adult groups and perhaps a few small swarms could form and move south to the interior of Yemen where conditions are favorable for breeding.



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

A few small escapee locusts could for groups in Iraq, Jordan, Syria, and Lebanon, and move south. Small-scale breeding is likely in summer breeding areas of Sudan and western lowlands in Eritrea at the foothills of the seasonal rains (*DLMCC/Yemen, FAO-DLIS, LLC/Oman, PPD/Ethiopia, PPD/Sudan, SPPV/Djibouti).*

Intensive monitoring and timely control operations remain critical to break the cycle that had invaded the Horn of Africa and Eastern Africa greater Horn and Eastern Africa region over the past year and a half, and avert any threats to crops and pasture in the region

NOTE: *Potential use of innovative technologies, such as drones, for high-resolution images in remote sensing is being explored. On trial bases, drones were used for locust monitoring, and control in localized and sensitive, hard to reach areas showed promising results. While range coverage 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.***

SGR - EOR: In the Eastern Outbreak Region (EOR), hatching and hopper and group formations continued in southwest Iran and control operations treated 6,370 ha during May; no locusts were reported elsewhere in the region (FAO-DLIS).

Forecast: In EOR, adult groups could form in southwest Iran and move to summer breeding areas along the Indo-Pakistan borders where small-scale breeding will commence with the onset of monsoon rains sometime in July (FAO-DLIS).

SGR – WOR: In WOR, limited breeding was reported in Algeria and control operations treated 32 ha near irrigated areas. Scattered adults were detected in northeast Morocco; locusts were reported in Tunisia or Libya or elsewhere in the region during May (ANLP/Chad, CNLCP/Mali, CNLAA/Mauritania,

CNLAA/Morocco, DPV/Tunisia, LLD/Libya, FAO-DLIS).

Forecast: In WOR, small-scale breeding may begin in Mauritania, Mali, Niger, and Chad at the foothills of the summer rains, but significant developments are not likely; other countries in the region will remain generally calm during the forecast period (ANLP/Chad, CNLCP/Mali, CNLAA/Mauritania, CNLAA/Morocco, DPV/Tunisia, LLD/Libya, FAO-DLIS).

Active surveillance, monitoring, preparedness and timely preventive and curative interventions are critical to avert =m any significant locust developments and the potential threat they pose to food security and livelihoods of vulnerable communities (FAO-DLIS, BHA/PSPM).

Red (Nomadic) Locust (NSE): In Tanzania, aerial survey launched by IRLCO – CSA and MinAgri revealed the presence of isolated NSE populations in Lake Rukwa Valley where flooding caused farming activities to extend to the plains. Scattered isolated low-density NSE populations were detected in Ikuu-Katavi and Bahi plains in Tanzania. In Malawi, surveys were not conducted and the NSE situation remained unclear in the primary outbreak areas in Lake Chilwa/L. Chiuta plains and Mpatasanjoka Dambo. In Mozambique, scattered populations were reported in Macalaule area, Nhamatanda in Buzi-Gorongosa plains and significant populations were expected to be present in Dimba plains on the Mozambican part of Lake Chilwa/L. Chiutaplains. Favorable breeding conditions prevailed in the Kafue Flats in Zambia (IRLCO-CSA).

Forecast: Dry weather and seasonal vegetation burning in NSE outbreak areas in Ikuu-Katavi, Malagarasi Basin and Rukwa Valley in Tanzania; Lake Chilwa plains in Malawi; Dimba plains in Mozambique and Kafue Flats in Zambia will force NSE to form concentration which could lead to swarm formations. IRLCO-CSA plans to conduct survey, and where necessary, launch control provided Member States and partners make funds available before swarms migrate out of the breeding areas and threaten crop production in neighboring regions (BHA/TPQ, IRLCO-SCACSA).

African Migratory Locust (LMI): Various densities of LMI persisted in Western and Southern Provinces of Zambia where control operations continued. No updates were received elsewhere in the region, however a scale down monitoring and control operations are expected to have continued in some countries (BHA/TPQ, IRLCO-CSA).

Adult Central America Locust SPI (source: M. Poo-Pech, April 2021).

Forecast: Ongoing control operations against LMI in Zambia and elsewhere in the region will likely further minimize development of swarms and reduce the threat to agriculture in the region (BHA/FSL, FAO-ROS, IRLCO-CSA).

Central American Locust - Schistocerca piceifrons (SPI): SPI (CAL) which was in recession in Mexico and Central America during the previous

months with eggs still underground, it is expected that first generation will start in June. During May, eggs mostly hibernate (see picture below) awaiting the rains to come and increase in temperature and vegetation developing

SENESA, Petch – SENESA, Mexico)

to hatch. Patches of early nymph are present in Central America where the rains have begun falling. Surveillance and monitoring are expected in Mexico and other countries to ensure timely interventions in the coming months.

*[**Note:** CAL is a pest of economic significance in Mexico and Central America and attacks hundreds of species of plants including agave, banana, beans, corn, cotton, peanut, rice, sesame, soybean, sorghum, sugarcane, several fruit trees, etc. **End note**]*

***South American Locust, Schistocerca cancellata (SCA)** (a.k.a. Flying lobster): With the rainy season in the making, locusts are expected to have begun further developing in Chaco and Formosa provinces in Argentina. Surveillance and control operations continue throughout the country, and similar situation may be present in neighboring areas in Uruguay and/or Paraguay(SENESA, Argentina)..*
https://www.voanews.com/americas/argentina-battles-locust-plague-northern-province.

Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC): No activities were reported, however, as weather conditions improve (rains and increased temperatures), DMA will likely begin hatching in the southern part of the CAC regions (BHA/TPQ/FSL)
http://www.fao.org/locusts-cca/en/

Fall armyworm (FAW): Moderate infestation of FAW was reported attacking irrigated maize in all the 8 Agricultural Division (Karonga, Mzuzu, Salima, Lilongwe, Machinga, Kasungu, Blantyre and Shire Valley) in Malawi. In Zimbabwe, severe infestations were reported in late planted maize in Chiredzi, Masvingo and Mwenezi districts and infestation.

Severe FAW damage to maize in Tanzania (PHS/Tanzania, May 2021)

In Zambia, mild Infestations were reported in irrigated and late planted rainfed maize and mild to severe infestations were observed in Arusha, Kilindi, Morogoro, Manyara and Tanga regions in Tanzania.

In most places, control operations were carried out by the affected farmers with assistance from MinAgri. However, control operations were not carried out in some areas due to lack of awareness among farmers in areas where

CBFAMFEW I project did not reach and compounded by lack of sufficient resources. In Kenya, FAW outbreaks were reported in maize crop in Trans Nzoia, Bungoma and Nakuru Counties. Control operations were carried out in all countries by the effected farmers with material and technical assistance from respective MinAgris (BHA/TPQ, IRLCO-CSA, PHS/Tanzania).

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 actions remain critical to abate any major crop damage (BHA/TPQ).*

Events on FAW: *The Food and Agriculture Organization of the United Nations (FAO) proposed a bold, transformative and coordinated Global Action for Fall Armyworm Control (GAFC) (https://www.ippc.int/en/the-global-action-for-fall-armyworm-control/). A total budget of USD 500 million (USD 450 million for the Global Action and USD 50 million for global coordination) is estimated to implement the GAFC in 65 target countries in Africa, Near East and Asia-Pacific from 2020 to 2022.*

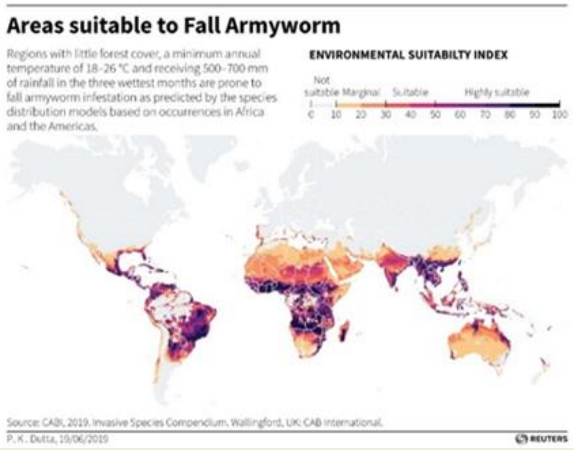
The GAFC is a pioneering initiative that aims to take radical, direct and coordinated measures to fight FAW at a global level. The 3 key objectives of the GAFC are to:

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).

(Source: Prasanna, 2021)



*The first meeting of the Technical Committee of the GAFC was conducted on **May 18, 2020** and thereafter, webinars were launched.*

Key Activity update: *BHA/TPQ/FSL is working on innovative intervention projects to benefit small-scale farming communities in affected countries with the intention to scale-up across different FAW prone regions in the spirit of the GAFC program. This initiative will build on experiences gained over the past several years, including Legacy OFDA, RFS, FAO and other partners and affected nations.*

Note: *Several species of FAW natural enemies have been identified in Ethiopia, Kenya, Tanzania, Madagascar, India, etc. 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 during this month (BHA/TPQ, IRLCO-CSA).

Forecast: AAW presence may be detected in areas in its northern invasion regions during the forecast period but does not pose a threat (BHA/TPQ, IRLCO-CSA).

Note: *Legacy OFDA developed printable and web-based interactive maps for AAW: http://usaid.maps.arcgis.com/apps/Viewer/index.html?appid=8ff7a2eefbee4783bfb36c3e784e29cb BHA/TPQ is considering a similar map for the CBFAMFEW countries.*

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

***Quelea* species (QSP):** QSP outbreaks were reported attacking early planted wheat in Narok and Meru Counties in Kenya and causing damage to rice crop in Morogoro, Manyara, Singida, Tabora and Coastal Regions in Tanzania. Control operation continues. Aerial control operations were carried out by DLCO-EA in collaboration with MinAgri in both countries (IRLCO-CSA).

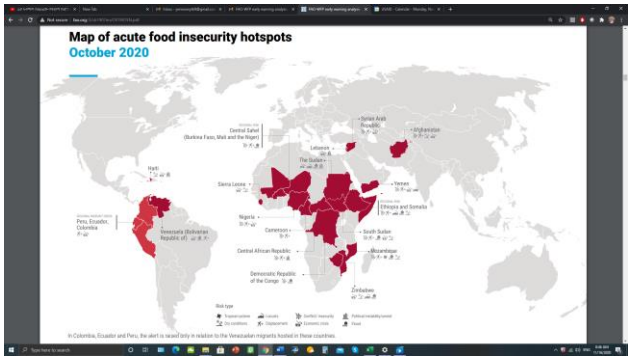
Forecast: QSP outbreaks are expected to continue causing damage to small grain cereals in Kenya and Tanzania and on irrigated wheat in Zimbabwe towards the end of the outlook period. The pest is also expected to cause damage elsewhere in the region and beyond where small grain crops are not harvested (BHA/TPQ, IRLCO-CSA).

Facts: *QSP birds 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 to 10,000 kg of seeds/day, enough to feed 12,000-20,000 people/day* (TPQ/ P&PM).

Rodents: No report was received during this month, but it is likely that the pest continues being a problem to crops and produce (BHA/TPQ).

NOTE*: Acute food insecurity hotspots map (see below) shows several countries and regions that are exposed to and/or are highly vulnerable to locust invasions plus other stressors – eastern Africa and the Horn, the Arabian Peninsula (Yemen), southern Africa (Zimbabwe). Other countries that are not list on the map as hotspots, including Eritrea, Botswana, Zambia, Namibia, Angola, Malawi, Tanzania, and Mozambique are also exposed to serious locust threats (source FAO and WFP, October 2020).* ***END NOTE***

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



All ETOP front-line countries *must maintain regular monitoring and surveillance and launch control interventions as needed. 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, National DPVs and PPDs, ELOs, etc., are encouraged to continue sharing ETOP information with stakeholders as often as possible. Lead farmers, field scouts, community forecasters and others must remain vigilant and report ETOP detections to relevant authorities as quickly as possible.*

BHA's Contributions to ETOP Abatement Interventions

USAID/BHA/TPQ is supporting an operational research through 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 affects small-holder farmers in its 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 small-holder farmers.

USAID/BHA/TPQ continuously explores parties interested in developing and expanding innovative technologies to help minimize the impacts of ETOPs on food security and livelihoods of the most vulnerable peoples and communities across regions.

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 security and server switch. FAO will be reinstating the system. Thanks to the system, SGR frontline countries and others had been able to effectively manage their strategic pesticide stocks and minimize/avoid accumulation of unusable pesticides and empty pesticide containers.

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

BHA/TPQ promotes an IPM approach to minimize risks associated with pesticide poisoning, stockpiling, and environmental contamination. An informed procurement and judiciously executed triangulations of surplus stocks from countries with large inventories of usable products to countries where they are much needed is worth considering.

Inventory of Strategic Pesticide Stocks for SGR Control

During May, control operations treated some 52 515 ha slightly higher than areas treated in April (42 681 ha), and nearly half the areas treated in March.

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	9,953~
Saudi Arabia	23,379~
Senegal	156,000~
Somalia	~
Sudan	103,482
South Sudan	
Tunisia	62,200 obsolete
Uganda	
Yemen	35,000[D]; 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
[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*™ (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 Criquett Pélerin 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)
ICAPC IGAD's Climate Prediction and Application Center
IGAD Intergovernmental Authority on Development (Horn of Africa)
IRIN Integrated Regional Information Networks
IRLCO-CSA International Red Locust Control Organization for Central and Southern Africa
ITCZ Inter-Tropical Convergence Zone
ITF Inter-Tropical Convergence Front = ITCZ)
FAO-DLIS Food and Agriculture Organizations' Desert Locust Information Service
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 Unites States Agency for International Development
UN the United Nations
WOR Western SGR Outbreak Region
ZEL Zonocerus elegans, the elegant grasshopper
ZVA Zonocerus variegatus, the variegated grasshopper, is emerging as a relatively new dry season pest, largely due to the destruction of its natural habitat through deforestation, land clearing, etc. for agricultural and other development efforts and due to climate anomalies

Point of Contact:

For additional information or questions, comments, or suggestions, etc., please reach out to:

Yeneneh T. Belayneh, PhD.
Senior Technical Advisor and Project Manager, USAID/BHA/TPQ:

ybelayneh@usaid.gov

Tel.: + 1-202-712-1859 (landline)
+ 1-703-362-5721 (mobile)

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