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

résumé en français est inclus

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**[1]): Although a significant decline in locust numbers was observed through April into early May in Ethiopia and Somalia in the Central Outbreak Region (COR) where intensive control operations and delayed seasonal rains contributed, the situation changed rather immediately as good rains in May created favorable conditions for locusts to further develop. As a result, more hopper bands fledged leading to formation of immature swarms in northwest Somalia where close to 80,330 ha were reported treated; hoppers and immature swarms were also treated in eastern Ethiopia on some 6,435 ha. By the end of June, immature swarms had reached southeastern Amhara and adjacent areas of eastern Afar regions (according to local MoA staff, the pest caused mild damage to more than 36,000 ha in Amhara region). A few immature swarms were detected and treated on 10 ha in southeast Djibouti during June. Breeding ended in northern Saudi Arabia where 2,235 ha were treated, and immature swarms moved south into the northern highlands in the interior of Yemen and control was launched on 5 ha. Local breeding was detected near the Nile River in Sudan and treated on 330 ha and scattered adults were observed near summer breeding areas. Adults persisted in southeast Egypt. In the Western Outbreak Region (WOR), localized breeding was treated in 351 ha in central Algeria and isolated adults were detected in northeast Morocco. The Eastern Outbreak Region (EOR) remained calm, and no locusts were detected. http://www.fao.org/ag/locusts/en/info/info/index.html

Forecast: In COR, limited swarm migration from northwest Somalia to eastern Ethiopia and Djibouti to northeast Ethiopia and perhaps Sudan. Swarms will mature and lay with the onset of the rains in Afar and possibly southeastern Amhara regions, and form hopper bands in August. A few swarms may migrate from northern Somalia to the interior of Yemen, and from the Yemen Highlands to northeast Ethiopia. Small-scale breeding is likely in the interior of Yemen, Sudan, and western Eritrea. In WOR, small-scale breeding is likely in Sahel West Africa in Mauritania, Mali, Niger, and Chad at the foothills of the summer rains, but significant developments are not likely. In EOR, low numbers of adults will likely appear and begin breeding in summer breeding areas along both sides of the Indo-Pakistan border at the foothills of the monsoon rains sometime in July.

Red (Nomadic) Locust (*Nomadacris septemfasciata*) **(NSE)**: Though surveillance was not conducted, it is likely that NSE may have congregated and formed

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

swarmlets in some primary outbreak areas in Malawi, Mozambique, Tanzania, and Zambia.

African Migratory Locust: *Locusta migratoria migratorioides* ***(LMI)***: LMI was not reported in IRLCO-CSA countries. No update was received from the southern outbreak region.

Tree Locusts, *Anacridium spp. (ASP):* ASP was not reported during this month.

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

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

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 continued breeding and causing damage to crop in CAC region.

Fall Armyworm *(Spodoptera frugiperda)* ***(FAW)***: FAW attack was reported in irrigated maize in Kenya, Malawi, Tanzania, and Zambia. 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 Manyara, Shinyanga and Tabors in Tanzania and wheat in Meru and Narok Counties in Kenya. The birds were also reported in Botswana where they were detected in sorghum crops.

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): Bien qu'une baisse significative des effectifs acridiens ait été observée jusqu'en avril et début mai en Éthiopie et en Somalie dans la région centrale de l'épidémie (COR) en raison d'opérations de lutte intensives et de pluies saisonnières retardées, la situation a plutôt changé immédiatement car les bonnes pluies de mai ont créé des conditions favorables pour que les criquets arrivent à maturité et commencent à se reproduire à partir de début juin. En conséquence, davantage de bandes larvaires se sont formées et ont effectué leur mue imaginale, formation d'essaims immatures dans le nord-ouest de la Somalie où près de 80 330 ha ont été traités et dans l'est de l'Éthiopie où plus de 6 435 ha ont été traités. Fin juin, un seul essaim immature a été détecté dans l'est de la région d'Afar et quelques essaims immatures ont été signalés dans le sud-est de la région d'Amhara. Quelques essaims immatures ont été détectés et traités sur 10 ha dans le sud-est de Djibouti au cours du mois. La reproduction s'est terminée dans le nord de l'Arabie saoudite où 2 235 ha ont été traités, et des essaims immatures se sont déplacés vers le sud dans les hautes terres du nord de l'intérieur du Yémen et la lutte a été lancée sur 5 ha. Une reproduction locale a été détectée près du Nil au Soudan et traitée sur 330 ha et des ailés épars ont été observés près des zones de reproduction estivale. Des ailés ont persisté dans le sud-est de l'Égypte. Dans la Région occidentale du foyer (WOR), une reproduction localisée a été traitée sur 351 ha dans le centre de l'Algérie et des ailés isolés ont été détectés dans le nord-est du Maroc. La Région orientale de la flambée (EOR) est restée calme et aucun criquet n'a été détecté. http://www.fao.org/ag/locusts/en/info/info/index.html

Prévisions: Dans le COR, migration d'essaims limitée du nord-ouest de la Somalie vers l'est de l'Éthiopie et de Djibouti vers le nord-est de l'Éthiopie et peut-être le Soudan. Des essaims arriveront à maturité et pondront avec le début des pluies dans les régions de l'Afar et peut-être du sud-est de l'Amhara, et formeront des bandes larvaires en août. Quelques essaims peuvent migrer du nord de la Somalie vers l'intérieur du Yémen, et des hautes terres du Yémen vers le nord-est de l'Éthiopie. Une reproduction à petite échelle est probable dans l'intérieur du Yémen, au Soudan et dans l'ouest de l'Érythrée. Dans le WOR, une reproduction à petite échelle est probable dans l'Afrique de l'Ouest sahélienne en Mauritanie, au Mali, au Niger et au Tchad au pied des pluies estivales, mais des développements significatifs sont peu probables. En EOR, de faibles effectifs d'ailés vont probablement apparaître et commencer à se reproduire dans les zones de reproduction estivale le long des deux côtés de la frontière indo-pakistanaise au pied des pluies de mousson dans le courant du mois de juillet.

Criquet nomade (*Nomadacris septemfasciata*) (NSE): Bien qu'aucune surveillance n'ait été effectuée, il est probable que la NSE se soit rassemblée et ait

formé des essaims dans certaines zones de foyer primaire au Malawi, au Mozambique, en Tanzanie et en Zambie.

Criquet migrateur africain: *Locusta migratoria migratorioides* **(LMI):** Locusta migratoria migratorioides (LMI): Le LMI n'a pas été signalé dans les pays IRLCO-CSA. Aucune mise à jour n'a été reçue de la région sud de l'épidémie.

Le criquet arborial, *Anacridium spp*: (ASP): ASP n'a pas été signalé 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 Amérique centrale et dans les régions voisines.

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

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 continuer à se reproduire et causer des dommages aux cultures dans la région de la CAC.

Chenille Légionnaire d'automne (*Spodoptera frugiperda*) (FAW): une attaque de la chenille légionnaire d'automne a été signalée dans du maïs irrigué au Kenya, au Malawi, en Tanzanie et en Zambie. 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 à Manyara, Shinyanga et Tabors en Tanzanie et le blé dans les comtés de Meru et Narok au Kenya. Les oiseaux ont également été signalés au Botswana où ils ont été détectés dans des cultures de sorgho.

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 21-30 of June, the Inter Tropical Front (ITF) has moved slightly north along its previous dekad position. The western (10W-10E) portion of the ITF was located approximately at 16.4N, whereas the average position was centered at 16.2N which was the same position as its climatology. This position of the ITF explains the continuation of moderate rainfall across some portions of northern Senegal, and southern Niger. The eastern (20E-35E) portion of the ITF was located at 15.6N, which was north to the climatological position centered at 14.6N. This position could explain the increase of rainfall across southern Chad, southern Sudan, and northwestern Ethiopia (NOAA, 7/2021).

Figure 1 shows the current position of the ITF relative to the long-term average position during the 3rd dekad of June and its previous position during the 2nd dekad of June. 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.

Figure 1

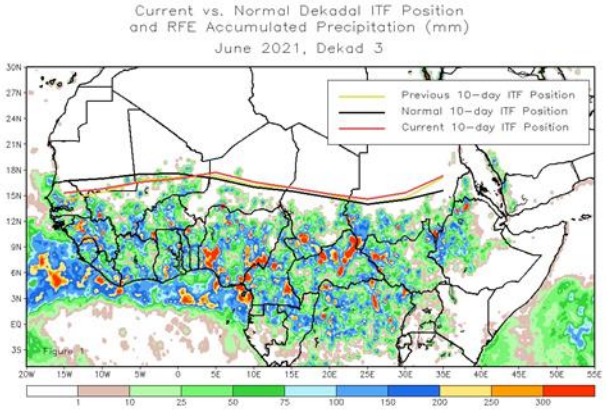


Figure 2

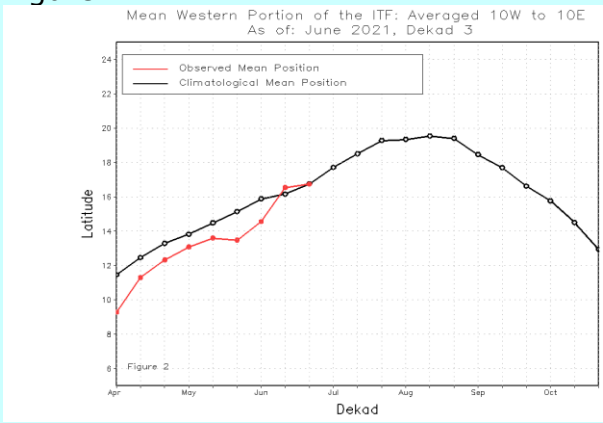
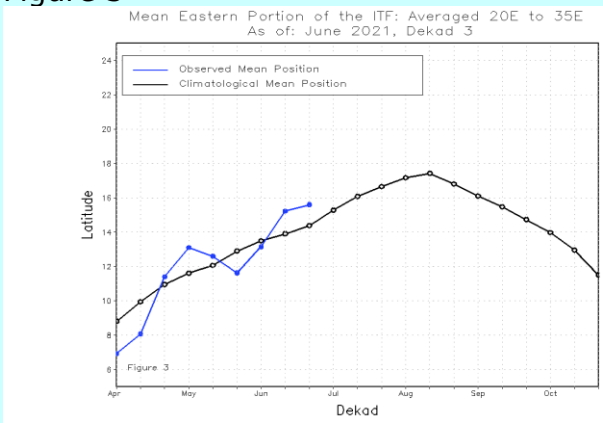


Figure 3



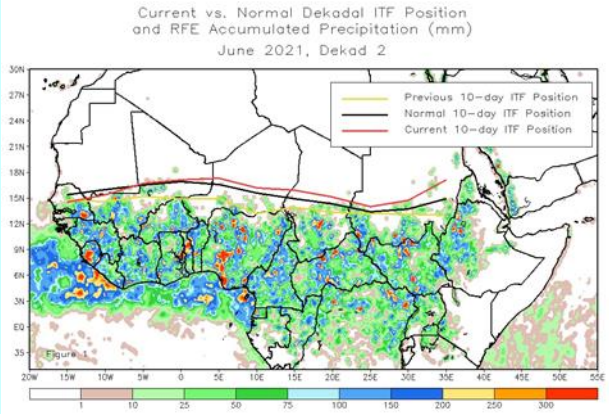
From 21 to 28 June, rainfall was above-average over parts of eastern Sudan and

western Ethiopia whereas, below-average rainfall was observed over much of South Sudan and Uganda. Rainfall was below-average over parts of central and northern DRC, and pockets of Central African Republic (CAR). Above-average rainfall was observed over southern Cameroon, Equatorial Guinea, northern CAR, and parts of Gabon and Congo. In West Africa, above-average rainfall was observed over much of the Gulf of Guinea countries and the neighboring areas of southern Sahel. Below-average rainfall was observed over pockets of Mali and Nigeria.

Forecast: From 6-12 July, there is an increased chance for below-average rainfall across southern Senegal, Guinea-Bissau, southwestern Mali, Cote d'Ivoire, western Burkina Faso, Ghana, Togo, Benin, southwestern Nigeria: An area of anomalous lower-level divergence and upper-level convergence is expected to suppress rainfall in the region. There is an increased chance for above-average rainfall over the far eastern portions of Sudan and South Sudan, and western Ethiopia (see Map, NOAA, 6/28).

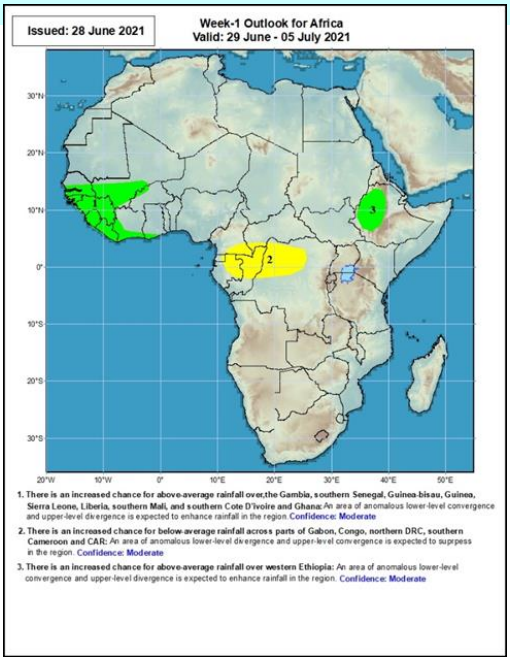
From 11-20 of June, the ITF has moved significantly further north passing the climatological position. The western (10W-10E) portion of the ITF was located approximately at 16.2N, whereas the average position was centered at 16.3N. This position of the ITF explains the increase rainfall across southern and central Senegal, and central Mali during the previous dekad. The eastern (20E-35E) portion of the ITF was located at 15.2N, which was north to the climatological position centered at 14.1N. This position could explain the increase of rainfall across southern Sudan and western Ethiopia. Figure 11 shows the current position of the ITF relative to the long-term average position during the 2nd dekad of June and its previous position during the 1st dekad of June (NOAA, 6/28).

Figure 11



Forecast: From 29 June to 5 July, there is an increased chance for above-average rainfall over southern Senegal, Guinea-Bissau, Guinea, Sierra Leone, Liberia, southwestern Mali, and coastal Cote d'Ivoire; expected enhanced rainfall in the region.

Map AA

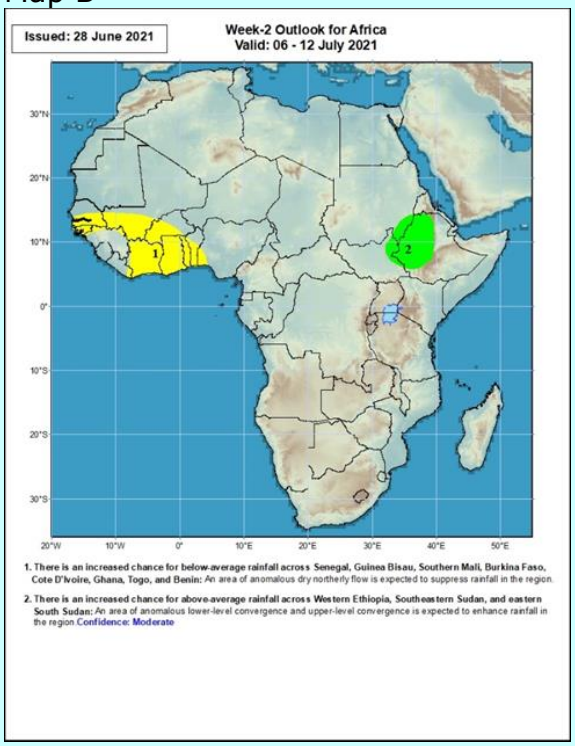


There is an increased chance for below-average rainfall over eastern Gabon,

northern Congo, and northwestern DRC: An area of anomalous lower-level divergence and upper-level convergence is expected to suppress rainfall in the region. There is an increased chance for above-average rainfall over western Ethiopia (NOAA, 6/2021).

Forecast: From 6-12 July, there is an increased chance for below-average rainfall across southern Senegal, Guinea-Bissau, southwestern Mali, Cote d'Ivoire, western Burkina Faso, Ghana, Togo, Benin, southwestern Nigeria: An area of anomalous lower-level divergence and upper-level convergence is expected to suppress rainfall in the region. There is an increased chance for above-average rainfall over the far eastern portions of Sudan and South Sudan, and western Ethiopia (see Map, NOAA, 6/28).

Map B



In the **NSE** region, generally dry weather prevailed during June. However, low to medium rains were recorded in Buzi-Gorongosa and Dimba plains in Mozambique (29.0 mm in Mafambisse, 28.0 mm in Buzi, 30.0 mm in Gorongosa 25.0 mm in Namatanda, 32.0 mm in Caia, and 30.0 in Dimba). Temperatures were mild to cool in most of the outbreak areas. Vegetation burning was expected in most of the outbreak areas (NOAA, IRLCO-CSA).

CAC Region: The CAC region is expected to have experienced precipitation sufficient for locusts to continue breeding in the region.

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, a significant decline in locust numbers was observed through April into early May in Ethiopia and Somalia due to intensive control operations and delayed seasonal rains. The situation changed rather instantly as good rains in May created favorable conditions for locusts to further develop. These and other factors such as insecurity contributed to continued development of locusts in northwest Somalia, eastern Ethiopia and to some extent Djibouti during the past several weeks.

Uncontrolled swarms from northwest Somalia and Djibouti and some from local stocks migrated towards eastern and northeastern Ethiopia and reached Afar and Amhara regions by the end of June. In Amhara region, it was reported that the swarms caused damage to crop over 36,000 ha (exact figures to be verified) and similar reports are not unlikely from adjacent areas). Hopper bands and immature swarms were reported treated on some 6,435 ha in eastern Ethiopia and close to 80,330 ha were reported treated in Somalia during June. A few immature swarms were detected and treated on 10 ha in southeast Djibouti during this month. Local breeding was detected near the Nile River and treated on 330 ha and scattered adults were observed near summer breeding areas in Sudan. Adults persisted in southeast Egypt. Breeding ended in northern Saudi Arabia where 2,235 ha were treated, and immature swarms from SA moved south into the northern highlands in the interior of Yemen and control was launched on 5 ha. No locusts were reported in Eritrea or Oman during this month (DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Ethiopia, PPD/Sudan, SPPV/Djibouti).

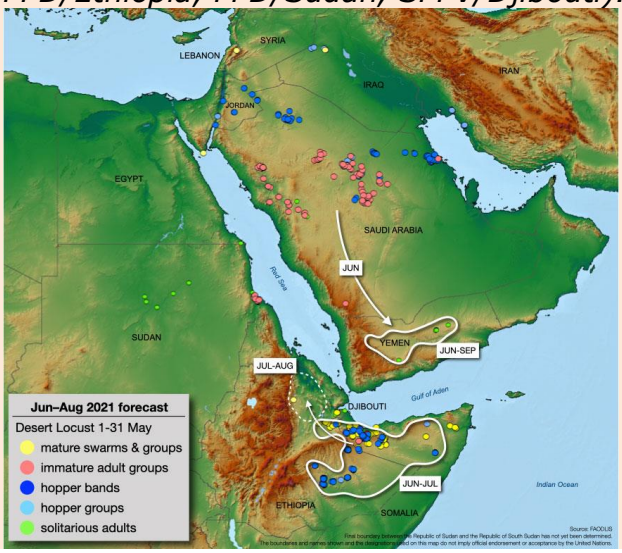
Forecast: Swarm migration from northwest Somalia, Djobouti, and to some extent, eastern to northeast Ethiopia and perhaps Sudan is likely during the coming months. Swarms will mature and lay with the onset of the rains in Afar and possibly southeastern Amhara regions, and form hopper bands in August. A few swarms from the Yemen may reach Afar region in northeastern Ethiopia. A few swarms may also migrate from northern Somalia to the interior of Yemen where small-scale breeding is likely. Limited breeding may occur in Sudan and western Eritrea. Most of the swarms from Saudi that reached the northern highlands of Yemen will reach summer breeding areas in the interior of the country.

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

Aerial and ground teams must intensify surveillance and control operations to curtain further development and potential swarms from Yemen to invade Ethiopia's Afar region. With the above normal to normal rains in the forecast in the region, aggressive control and surveillance must be maintained against any locust

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

invasions and prevent further spread, which, if left unabated, could result in serious crop, and pasture damage and further spread into Sudan (BHA/TPQ, *DLMCC/Yemen, FAO-DLIS, LLC/Oman, PPD/Ethiopia, PPD/Sudan, SPPV/Djibouti).*



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

Intensive monitoring and timely control operations remain critical to break the cycle that had invaded the Horn of Africa and Greater 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: EOR remained calm, and no locusts were detected during this month (FAO-DLIS).

Forecast: In EOR, low numbers of adults will likely appear and begin breeding in summer breeding areas along both sides of the India and Pakistan border at the foothills of the monsoon rains sometime in July (FAO-DLIS).

SGR – WOR: In WOR, localized breeding was treated in 351 ha in central Algeria and isolated adults were detected in northeast Morocco. No locusts were reported in Tunisia or Libya or elsewhere in the region during this month (ANLP/Chad, CNLCP/Mali, CNLAA/Mauritania, CNLAA/Morocco, DPV/Tunisia, LLD/Libya, FAO-DLIS).

Forecast: In WOR, small-scale breeding is likely in Sahel West Africa 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 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): The NSE situation remained a concern in Lake Chilwa/ Lake Chiuta plains, Mpatasanjoka in Malawi and Buzi Gorongosa and Dimba plains in Mozambique where locusts are expected to have congregated and may have formed swarmlets. A similar situation is likely in Iku-Katavi plians, Malagarasi Basin, in Bahi Rukwa valley, in Tanzania, in Kafue Flats, Lukanga Swamps, Zambia and in Mpatsanjoka Dambo, Lake Chilwa and Lake Chiuta plains, in Malawi. Routine and timely survey and control are critical to abate potential invasions of crops and pasture as well as migrations to neighboring countries. IRLCO-CSA continues its appeal to Member Countries and others to avail resources to support critical and timely survey and control operations to avert the threats the pest poses to food security and livelihoods in the region (IRLCO-CSA).

Forecast: Vegetation burning which is expected to continue in NSE outbreak and invasion areas in Malawi, Tanzania, Mozambique, and Zambia and elsewhere in the region will likely force locusts to further concentrate and perhaps, escape to neighboring areas where they could threaten crops and pasture. Timely surveillance and control operations remain critical to avert any potential threats to food security and livelihoods of affected communities across region (BHA/TPQ, IRLCO-CSA).

African Migratory Locust (LMI): LMI activities were not reported in IRLCO-CSA member states during this month. No updates were received elsewhere in the region; however, it is likely that the pest may have been present at a reduced number (BHA/TPQ, IRLCO-CSA).

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

Forecast: Timely operations and routine surveillance and control will further reduce the threat the pest poses to agriculture and pasture (BHA/FSL, FAO-ROS, IRLCO-CSA).

Central American Locust - Schistocerca piceifrons (SPI): SPI (CAL) no update was received at the time this bulletin was compiled; however, it is likely that the pest began developing in Mexico and Central America with eggs hatching and first-generation populations began forming. It is to be recalled that during May, patches of early nymph (see picture below) were detected in Central America where rain began falling. Routine surveillance and monitoring are expected to have continued to ensure timely interventions in Mexico and elsewhere in Central America in the coming months.

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

SENESA, Petch – SENESA, Mexico)

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 a similar situation may be launched in neighboring areas and 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 improved (rains and increased temperatures), DMA is expected to have begun further developing in the southern and central part of the CAC regions where control operations are expected to have intensified (BHA/TPQ/FSL)
http://www.fao.org/locusts-cca/en/

Fall armyworm (FAW): FAW outbreaks were reported in Bungoma, West Pokot, Kiambu, Uasin Gishu, Kirinyaga and Nakuru Counties, Kenya. The pest was also detected attacking irrigated maize in Midlands's province in Zimbabwe during June. In Tanzania, moderate infestations were reported in Mara, Mwanza, Manyara, Kilimanjaro, Arusha and Tanga as well as in Malawi and Zambia where it was reported attacking irrigated maize crops. Control operations were carried out by the affected farmers with technical and material support from respective Ministries of Agriculture. FAW impact is likely in irrigated and/or rainfed maize crops across regions where awareness among rural communities is low to lacking, more so in areas where CBFAMFEW I or similar interventions did not sufficiently penetrate, and the compounding effects of the absence of sufficient resources undermined (BHA/TPQ, IRLCO-CSA, PHS/Tanzania).

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

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.

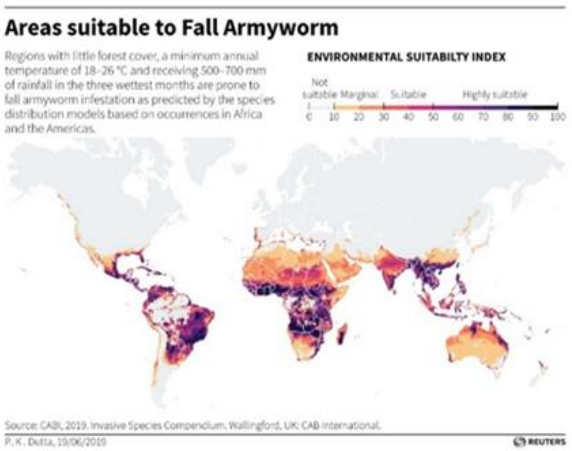
The GAFC is a pioneering initiative that aims to take radical, direct and coordinated measures to fight FAW at a global level. The 3 key objectives of the GAFC are to:

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: Significant presence of AAW 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/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 in wheat crops in Narok and Meru (Buuri sub-county) countries in Kenya where control was conducted by the DLCO-EA spray aircraft in coordination with MinAgri/PCD. QSP outbreaks were also reported attacking rice and sorghum crops in the Lake regions – in Shinyanga, Mwanza and Tabora in Tanzania. Aerial control was launched by the DLCO-EA in coordination with the MinAgri/PHS. QSP outbreaks were reported in Botswana where the birds were reported attacking sorghum crops in Pandamatenga and control operations contained the outbreaks from spilling overt to Matabeleland Provinces.in Zimbabwe and attacking winter wheat, millet, and sorghum crops in (IRLCO-CSA).

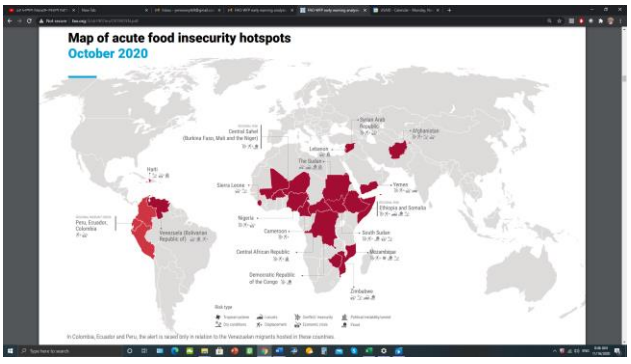
Forecast: QSP outbreaks are expected to continue causing damage to small grain cereals in Kenya and Tanzania and on irrigated wheat in Zimbabwe towards the end of the outlook period. The pest is also expected to cause damage to small grain crops elsewhere where crops are yet to be harvested (BHA/TPQ, 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 June, control operations treated some 89,687 ha (80,330 ha in Somalia) compared to the 52 515-ha treated in May and more than twice the areas treated in April (42 681 ha).

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:

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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