

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

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹): During February, SGR continued developing in the central outbreak region (COR) where immature swarms were reported in eastern and southern Ethiopia and central and northern Kenya. Hopper bands, fledglings and swarms continued to form in northern Somalia. The number of swarms from Somalia invading Ethiopia and Kenya significantly reduced. Control operations treated 73,838 ha in Ethiopia, 11,349 ha Kenya and 21,143 ha in Somalia (the situation in the southern region of Somalia remained unclear). A few small swarms from Kenya reached northeast Tanzania and controlled on 638 ha during the second week of February. In Eritrea, hopper and adult groups were detected and controlled on 1,500 ha. In Sudan, hopper bands and swarms were reported in winter breeding areas on the Red Sea coastal areas and controlled on 16,781 ha. In Saudi Arabia, hoppers, fledgling and adults persisted on the southern coast and swarms arrived in the interior of the country where egg laying will commence; control covered 104,775 ha. In Egypt, scattered adults were treated on 30 ha. In the western

outbreak region (WOR), the situation remained generally calm and only some adult locusts were controlled on 20 ha in Algeria and isolated adults and limited breeding occurred in Niger and Morocco, respectively. The eastern outbreak region (EOR) remained calm. Total areas treated in February are 230,074 ha, much lower than the 316,414 ha treated in January. <http://www.fao.org/ag/locusts/en/info/info/index.html>

Forecast: In COR, swarms will mature and lay eggs in areas that received rainfall in southern Ethiopia and Kenya and some hopper bands will form. In Somalia, swarms will likely persist on the northern plateau and some may reach eastern Ethiopia in the coming month. In Saudi Arabia limited breeding is likely on the Red Sea coast and widespread hatching will form bands in the interior of the country. Small groups of adults will likely form on the central and northern coast in Eritrea and hatching and band formation will occur on central coast of Sudan. In Yemen local breeding is likely on the Red Sea coast and the interior of the country. In WOR, small-scale breeding is likely south of the Atlas Mountains in Morocco and some isolated locusts will likely appear in northern Niger and central Algeria. In EOR, small-scale breeding is likely with the onset of spring rains in southern Iran and southwest Pakistan. <http://www.fao.org/ag/locusts/en/info/info/index.html>

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

Red (Nomadic) Locust (*Nomadacris septemfasciata*) (**NSE**): NSE is expected to have formed hopper bands in key breeding areas in Malawi, Mozambique, Tanzania, Zambia and Zimbabwe.

African Migratory Locust: *Locusta migratoria migratorioides* (**LMI**): LMI was reported in Zambia and expected to be present in Angola, Botswana, Namibia and Zimbabwe.

Tree Locusts, *Anacridium spp.* (**ASP**): No report on ASP during this month.

Central American Locust, *Schistocerca piceiferons* (**SPI**): No update was received, but it is likely SPI persisted in Central American.

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

Italian (CIT), Moroccan (DMA), and Asian Migratory Locusts (**LMI**): The situation is expected to have remained calm in CAC.

Fall Armyworm (*Spodoptera frugiperda*) (**FAW**): FAW was reported attacking maize, sorghum and millet in Tanzania, Kenya, Malawi, Mozambique, Zambia and Zimbabwe.

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

Quelea spp. (QSP): QSP outbreaks were reported in Kitui and Makueni counties in Kenya and Bahi district in Tanzania.

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/OFDA/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): En février, la SGR a continué à se développer dans la région centrale de l'épidémie (COR) où des essaims immatures ont été signalés dans l'est et le sud de l'Éthiopie et le centre et le nord du Kenya. Des bandes larvaires, des oisillons et des essaims ont continué à se former dans le nord de la Somalie. Le nombre d'essaims de Somalie envahissant l'Éthiopie et le Kenya a considérablement diminué. Les opérations de lutte ont traité 73 838 ha en Éthiopie, 11 349 ha au Kenya et 21 143 ha en Somalie (la

situation dans la région sud de la Somalie n'est pas claire). Quelques petits essaims du Kenya ont atteint le nord-est de la Tanzanie et contrôlés sur 638 ha. En Érythrée, des groupes de larves et d'ailés ont été détectés et contrôlés sur 1 500 ha. Au Soudan, des bandes larvaires et des essaims ont été signalés dans les zones de reproduction hivernale des zones côtières de la mer Rouge et contrôlés sur 16 781 ha. En Arabie saoudite, des larves, des jeunes pousses et des ailés ont persisté dans le sud et des essaims sont arrivés à l'intérieur du pays pour pondre des œufs et les opérations de lutte ont traité 104 775 ha. En Egypte, des ailés épars ont été traités sur 30 ha. Dans la région ouest du foyer (WOR), la situation est restée généralement calme et seuls quelques criquets adultes ont été contrôlés sur 20 ha en Algérie et des ailés isolés et une reproduction limitée ont eu lieu au Niger et au Maroc, respectivement. La région de l'est du foyer (EOR) est restée calme. Le total des superficies traitées en février était de 230 074 ha, bien inférieur aux 316 414 ha traités en janvier.

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

Prévisions: Au COR, les essaims arriveront à maturité et pondront dans les zones qui ont reçu des pluies dans le sud de l'Éthiopie et au Kenya et des bandes larvaires de petite à moyenne échelle se formeront. En Somalie, des essaims persisteront probablement sur le plateau nord et certains pourraient atteindre l'est de l'Éthiopie dans le mois à venir. En Arabie saoudite, une reproduction limitée est probable sur la côte de la

mer Rouge et des éclosions généralisées formeront des bandes à l'intérieur du pays. De petits groupes d'ailés se formeront probablement sur la côte centrale et septentrionale de l'Érythrée et des éclosions et la formation de bandes se produiront sur la côte centrale du Soudan. Au Yémen, une reproduction locale est probable sur la côte de la mer Rouge et à l'intérieur du pays. Dans le WOR, une reproduction printanière à petite échelle est probablement au sud des montagnes de l'Atlas au Maroc et des criquets isolés apparaîtront probablement dans le nord du Niger et le centre de l'Algérie. Dans l'EOR, une reproduction à petite échelle commencera avec le début des pluies printanières dans le sud de l'Iran et le sud-ouest du Pakistan.

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

Criquet nomade (*Nomadacris septemfasciata*) (NSE):

Les populations du NSE peuvent avoir formé des bandes larvaires dans les principales zones de reproduction du Malawi, du Mozambique, de la Tanzanie, de la Zambie et du Zimbabwe.

Criquet migrateur africain: *Locusta migratoria migratorioides* (LMI): LMI a été signalée en Zambie et probablement présente en Angola, au Botswana, en Namibie et au Zimbabwe.

Le criquet arborial, *Anacridium spp.* (ASP): Le rapport ASP n'a pas été reçu ce mois-ci.

Criquet Amérique centrale, *Schistocerca piceifrons piceiferons* (SPI): Aucune mise à jour n'a été reçue, mais il est probable que la SPI a persisté en Amérique centrale.

Criquet d'Amérique du Sud, *Schistocerca cancellata* (SCA): Aucune mise à jour n'a été reçue sur SCA au cours de ce mois.

Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI): Les activités DMA, CIT et LMI se sont terminées à CAC et la situation restera calme jusqu'au printemps.

Chenille Légionnaire d'automne (*Spodoptera frugiperda*) (FAW): FAW a été signalé avoir attaqué du maïs, du sorgho et du mil en Tanzanie, au Kenya, au Malawi, au Mozambique, en Zambie et au Zimbabwe.

Chenille Légionnaire africaine (AAW), *Spodoptera exempta*: Aucune mise à jour n'a été reçue sur AAW au cours de ce mois.

Quelea spp. oiseaux (QSP): Des flambées de QSP ont été signalées dans les comtés de Kitui et Makueni au Kenya et dans le district de Bahi en Tanzanie.

La surveillance active, le suivi et les interventions préventives et curatives opportunes ainsi que le partage des informations 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 / OFDA / 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, 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](#)

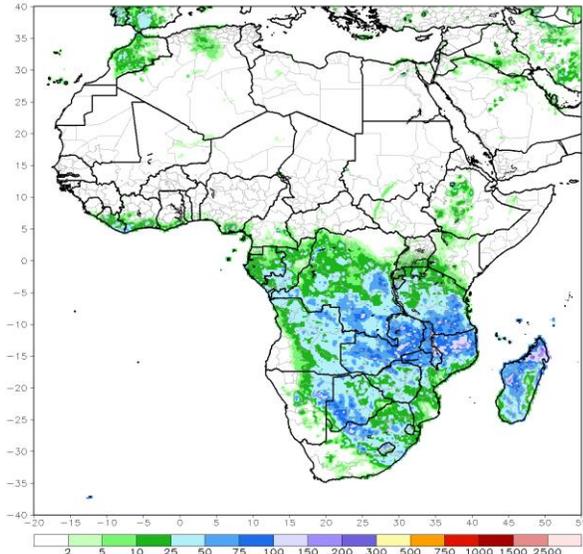
Additional resources on ETOPs can be found on the last pages of this Bulletin.

Weather and Ecological Conditions

In COR, light to moderate rains fell from as far north as Nazareth-Adama in the central Rift Valley in Ethiopia to north of Mt. Kenya, including Samburu, western Marsabit, eastern Turkana counties in northern Kenya during a few days in the last dekad of February. As a result, breeding conditions are likely to improve. In northern Somalia, vegetation remained generally green on the northern plateau, the coast and the escarpment, but it was drying out on the northwest. Light showers fell in winter breeding areas along both sides of the Red Sea on the southern coast of Saudi Arabia and Tihama of Yemen, down to the southern coast of Eritrea. Light rains also fell further north on the coast of Saudi Arabia

between Yenbo and ecological conditions remain favorable in these areas as well as on the northern coastal plains in Eritrea and Sudan up to Port Sudan (FAO-DLIS).

RFE2 7-Day Total Rainfall (mm)
Period: 22Feb2021 - 28Feb2021



NOAA March 1, 2021

Other winter breeding areas remained dry. Light rains fell in spring breeding areas in the interior of Saudi Arabia between Gassim and near Qaryat Al Ulya and Al Hofaf. The rain combined with warmer than usual temperatures allowed conditions to improve for breeding at least one month earlier than in most years. Dry conditions prevailed in the interior of Yemen. In Oman, light rains fell at times in central areas between Marmul and Duqm, but generally conditions remained dry (FAO-DLIS, DLMCC/Yemen, LLS/Oman, PPD/Eritrea, PPD/Sudan, NOAA).

During the past 30 to 90 days, in southern Africa, persistent rains resulted in sustained moisture surpluses over southeastern Angola, Zambia, Botswana, Malawi, and Zimbabwe. Rainfall was below average over western and central Angola, and western Namibia. In East Africa, moisture deficits prevailed over

portions of southern Ethiopia, and local areas in Somalia and Kenya. Rainfall was above average much of Tanzania and Uganda. In central Africa, rainfall was above average over portions of DRC and southern Congo. Rainfall was below average over western Gabon, Equatorial Africa and CAR. In West Africa, rainfall was slightly above average in pockets along the Guinean coast (NOAA, 3/21).

In EOR, light to moderate rain fell at times during the 2nd dekad on the southwest coast of Iran near Bushehr while lighter rainfall occurred further east towards Bander-e-Lenghen. Light to moderate rains also fell in the Jaz Murian Basin near Sowlan and slightly improve ecological conditions for breeding, but more rainfall would be needed. Dry and relatively cool conditions prevailed in spring breeding areas of Sistan-Baluchistan in southeast Iran and Baluchistan in southwest Pakistan where conditions were unfavorable (FAO-DLIS).

In WOR, moisture deficit prevailed over the past four consecutive months causing vegetation to continue drying out on the Tamesna Plains and in the Air Mountains of northern Niger while it remained dry elsewhere in the northern Sahel. In northwest Africa, small pockets of green vegetation were present mainly in the Adrar Settouf of the Western Sahara and in the Draa Valley in Morocco, where breeding conditions were improving (ANLA/Chad, CNLAA/Mauritania, CNLP/Mali, CNLAA/Morocco, FAO-DLIS).

In the NSC regions, normal to above normal rains were recorded in several locations near outbreak areas in Wembere and Lake Rukwa plains and Malagarasi Basin in Tanzania. Above normal rain was also reported in Mozambique Mafambisse in Buzi, Gorongosa, and Dimba plains; causing

flooding in the Kafue Flats in Zambia and Buzi Gorongosa plains in Mozambique. Given that hatching had already occurred, and that hoppers can survive on partially submerged grasses, flooding may not have much effect on the locusts. It is to be recalled that heavy rains were reported in previous month in Botswana, Namibia and Zimbabwe (IRLCO-CSA).

CAC Region: In CAC, the situation remained largely cold-cool and dry.

ETOP proliferation vis-a-vis climate factors

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

http://www.cpc.ncep.noaa.gov/products/international/casia/casia_hazard.pdf

End note.

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

The **Desert Locust** (*Schistoseca gregaria* - **SGR**²) in COR: Immature swarms persisted in February in Ethiopia and Kenya. In Ethiopia, immature swarms are present east of the Rift Valley in the Bale Mountains (Arsi, Borena), and to the

northeast in the Harar Highlands (East Harerghe) and in the southern region (South Omo, Konso) where swarms were seen arriving from adjacent areas of northwest Somalia in the past few days. Control operations were intensified making good progress, particularly in Kenya where the earlier swarm invasion from the north ceased and remaining swarms in northern and central Kenya are smaller and fewer than a year ago – and treated more than 230,000 ha largely against immature swarms during this month - 73,835 ha in Ethiopia, 11,349 ha in Kenya and 21,143 ha in Somalia (immature swarms and hoppers).



A cloud of an immature (pink) swarm in Teltele area of southern Ethiopia on 28 February (FAO-DLIS)

A few swarms from Kenya crossed through the southeast border from Taita Taveta County and reached Mwanga District in Kilimanjaro Region in early January and Simanjiro District in neighboring Manyara Region. A DLCO aircraft that was at the time controlling Quelea birds in Moshi District was redirected and controlled the swarms in Olichorinyori village in Simanjiro District on the 10th. The 2nd invasion was detected on the 15th February in Landanai in the same District and the 3rd invasion occurred on 17th February through Longido

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

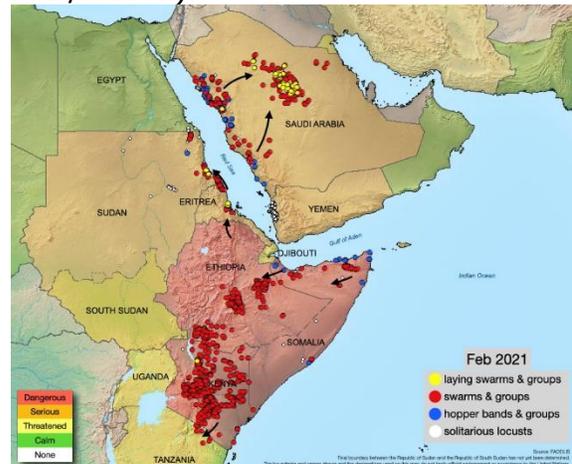
district in Arusha Region and Siha District in Kilimanjaro. Aerial control operations were launched by FAO planes and treated 638 ha during this month. In the past few days, a few small immature swarms were reported near Arusha in which some have started maturing; it is likely that these may be remnants of swarms that were previously treated (DLCO-EA, FAO-DLIS).

In the Red Sea winter breeding areas, control operations are in progress against a few swarms on the central coast in Sudan (16,781 ha) where breeding is continuing. A few adult groups and small swarms could move inland to the Atbara and Nile river valleys. Local breeding is also underway on the central coast of Eritrea (1,500 ha) while the situation is calm further north near Sudan. Control operations treated 30 ha in southern coast of Egypt.

In Yemen, low numbers of locusts are present on the Tihama coast. In Saudi Arabia control operations continue against hopper groups and bands on the northern Red Sea coast and against mature adult groups that are laying in the vast spring breeding areas of the interior and treated 104,775 ha. Early rains combined with unusually warm temperatures allowed ecological conditions to become favorable about one month earlier than normal, which could give rise to widespread hatching and band formation later in March in the interior areas of Saudi Arabia (FAO-DLIS).

Forecast: Showers that fell during the last week of February may allow swarms to mature rapidly in northern Kenya and southern Ethiopia and lay eggs that could hatch in late March, causing small hopper bands to form. Spring breeding is likely to be limited as control continue to reduce current infestations supplemented by well below-normal rains are forecasted. As expected, an increasing number of new

swarms formed in northern Somalia, which are likely to disperse across the northern plateau. In northern Somalia, late instar hopper hands are still present in the northeast (Puntland) and on the northwest coast (Somaliland) near Djibouti. New immature swarms continue to form in both areas and aerial control operations are in progress. The swarms are likely to disperse on the northern plateau, possibly reaching eastern Ethiopia near Jijiga and Dire Dawa. No reports of locusts have been received recently from central and southern parts of the country (DLCO-EA, DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Eritrea, PPD/Sudan).



SGR presence in east Africa and the Arabian Peninsula (FAO-DLIS)

Active monitoring and intensive control operations remain critical to avert any major threats and minimize damage to crops and pasture in the months to come (DLCO-EA, DLMCC/Yemen, FAO-DLIS, PPD/Eritrea, PPD/Sudan, SPPV/Djibouti).

SGR - EOR: No locust was reported in EOR during February (FAO-DLIS).

Forecast: In EOR, small-scale breeding will commence with the onset of the spring rains in southern Iran and

southwest Pakistan, but significant development is not likely during the forecast period (BHA/TPQ, FAO-DLIS).

SGR – WOR: In WOR, the SGR situation remained generally calm during February and only a few adults were controlled on 20 ha in Algeria and isolated adults were reported in Niger while a limited breeding occurred in Morocco.

Forecast: Small-scale spring breeding is likely south of the Atlas Mountains in Morocco and isolated locusts will occur in northern Niger and central Algeria in WOR, but significant developments are not likely during the forecast period (ANLA/Chad, CNLAA/Mauritania, CNLAA/Morocco, CNLCP/Mali, CNLA/Tunisia, FAO-DLIS).

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

Red (Nomadic) Locust (NSE): NSE may have formed hopper bands in Ikuu-Katavi and North and South Rukwa plains and Malagarasi Basin in Tanzania. A similar situation is likely in Lake Chilwa/Lake Chiuta plains shared by Malawi and Mozambique and in Buzi-Gorongosa and Dimba plains in Mozambique where ecological conditions are favorable.

Forecast: NSE hoppers will fledge and mature; if not controlled, they will likely migrate and invade neighboring countries - Uganda, Rwanda, Burundi, Republic of Congo and perhaps Kenya, Botswana and Zimbabwe depending on wind trajectory. Timely surveillance and control remain

critical to prevent swarm migration crop and pasture damage (IRLCO-CSA).

African Migratory Locust (LMI): In Zambia, ground survey by MoA staff detected LMI [mixed with a grasshopper species (*Catolopus* spp.)] on pasture and maize in Kazungula, Mwandu, Sesheke, Sioma districts. The pest was reported causing mild damage to maize plants. Ground control was being carried out with motorized sprayers using Malathion 40% EC at the time this bulletin was compiled. LMI is likely to be present in Angola, Botswana, Namibia, and Zimbabwe during February (BHA/TPQ, IRLOC-CSA).

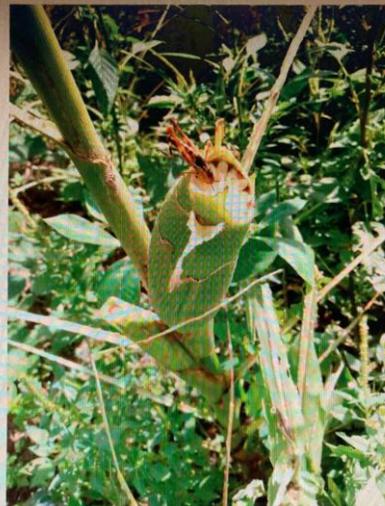


Figure 1: Damaged maize crop by *Catolopus* spp.

IRLCO-CSA, 3/21

Forecast: Above normal precipitation created favorable ecological conditions in LMI breeding areas, consequently, vast areas in primary breeding regions likely require extensive surveillance and control operations (IRLCO-CSA).

Active surveillance and timely control interventions remain critical to prevent

significant damage to crops and pasture (BHA/TPQ, FAO-ROS, IRLCO-CSA).

Note: FAO Southern Africa Region in consultation with the IRLCO-CSA developed an action plan (AP) for the LMI operations in the region. The AP has since been updated by SADC and put an appeal at USD 21 million. The updated AP will include coordination, response, preparedness, food security and livelihoods of millions of affected people in targeted countries in the region. FAO is working in close contact with SADC, affected member country MoAs, IRLCO-CSA, donors and other stakeholders to help launch the AP and address the LMI threat to food security and livelihoods of millions of people (FAO/Southern Africa).

Central American Locust -

Schistocerca piceifrons (SPI): No update was received at the time this bulletin was compiled.

[**Note:** CAL is a pest of economic importance 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.]

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

No update was received at the time this bulletin was compiled

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

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

No activities were reported, and the situation will remain calm till upcoming spring (BHA/TPQ/FSL) <http://www.fao.org/locusts-cca/en/>

Fall armyworm (FAW): FAW was reported attacking maize, millet and sorghum in 8 Agricultural Development Divisions (ADD) in Malawi; in Sofala, Zambezia and Cabo Delgado Provinces in Mozambique; Dodoma, Municipal, Manyoni and Kilindi districts in Tanzania, in all 10 provinces in Zambia as well as in Midland, Manicaland, Mashonaland Central, Mashonaland East, Mashonaland West and Mashvingo Provinces in Zimbabwe. Control operations were mostly conducted by the affected farmers with material and technical support from MoAs. Some farmers utilized indigenous methods such as neem extract, etc. In most places assessed damage was reported mild. No update was received from other countries at the time this bulletin was compiled, but it is likely the pest is present on irrigated and rain-fed cereal crops (BHA/TPQ, IRLCO-CSA).

Forecast: FAW is likely to continue affecting rain-fed and irrigated maize and other cereal crops across sub-Saharan Africa, Asia, the Pacific Regions and elsewhere during the forecast period.

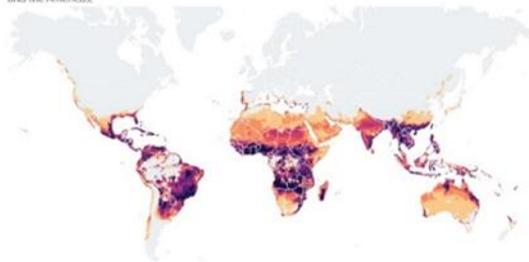
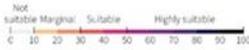
Active monitoring, surveillance, reporting and timely actions remain critical to abate significant crop damage (BHA/TPQ).

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 is estimated to implement the GAFC in 65 target countries in Africa, Near East and Asia-Pacific from 2020 to 2022.

Areas suitable to Fall Armyworm

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

ENVIRONMENTAL SUITABILITY INDEX



Source: CAB, 2019. Invasive Species Compendium, Wallingford, UK: CAB International.
P. K. Dutta, 29/06/2020

REUTERS

A total budget of USD 500 million is estimated to implement the GAFC in 65 target countries in Africa, Near East and Asia-Pacific from 2020 to 2022. This envisages an estimated USD 450 million for the Global Action and USD 50 million for global coordination.

The first meeting of the Technical Committee of the GAFC was conducted on **May 18, 2020**. The GAFC is a pioneering initiative that aims to mobilize USD 500 million over the period 2020–2022 to take radical, direct and coordinated measures to fight FAW at a global level. The 3 key objectives of the GAFC are to:

- Establish a global coordination and regional collaboration on monitoring, early warning, and intelligent pest management of FAW;
- Reduce crop losses caused by FAW and
- Reduce the risk of further spread of FAW to new areas (Europe and South Pacific).

Key Activity update: BHA/TPQ/FSL is working on innovative intervention projects to benefit large numbers of small-scale farming communities in affected countries with the intention to scale-up cross different FAW prone regions. This initiative will build on experiences gained over the past several

years, including OFDA (BHA) and RFS sponsored initiatives.

Note: Several species of FAW natural enemies have been identified in Ethiopia, Kenya, Tanzania, Madagascar, India, etc. and are being further studied to determine their efficacy, environmental impacts and safety. **End note.**

African Armyworm (AAW): AAW outbreak was not reported during this month (DLCO-EA, IRLCO-CSA).

Forecast: AAW likely appear in cereal and pasture fields in the central outbreak region, but the southern outbreak region will likely remain calm as the AAW season is coming to an end (BHA/TPQ, IRLCO-CSA).

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

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

Quelea sp. (QSP): QSP outbreaks were reported in Mtito Andei Ward in Makueni county in Kenya where the birds were feeding on millet and sorghum. Aerial control was undertaken with a DLCO-EA aircraft and material support by the MoA. The pest was also reported in Bahi district of Tanzania and control was carried out by DLCO-EA and MoA (DLCO-EA, IRLCO-CSA).

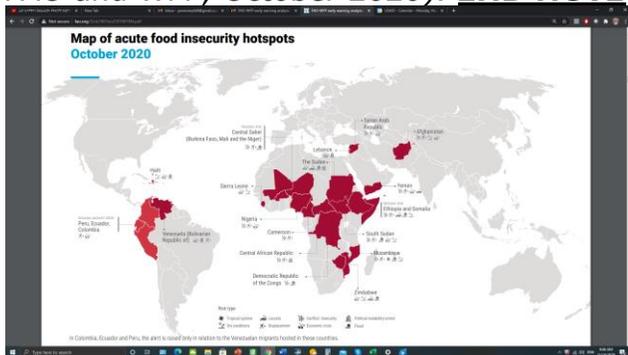
Forecast: QSP outbreaks are likely to appear in Kenya, Tanzania, Zimbabwe and elsewhere on rain-fed and/or irrigated small-grain cereal crops. Active surveillance and timely control remain

critical to avert serious damage to crops (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 (OFDA/AELGA).

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.

OFDA's Contributions to ETOP Abatement Interventions

USAID/OFDA/PSPM 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/OFDA and 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.**

OFDA/PSPM 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 February, 230,074 ha were reported controlled mainly in COR

(73,838 ha in Ethiopia, 11,349 in Kenya, 21,143 ha in Somalia, 638 ha in Tanzania, 18,781 ha in Sudan, 1,500 ha in Eritrea, 30 ha in Egypt, and 104,775 ha in Saudi Arabia). Only 20 ha were controlled in Algeria (FAO-DLIS, PPD/Eritrea. PPD/Sudan). 316,414 ha were reported controlled in January.

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	10,850
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 up to date

^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 = Green Muscle™ (fungal-based biological pesticide, e.g., NOVACRID)

LIST OF ACRONYMS

AAW	African armyworm (<i>Spodoptera expempta</i>)	CRC	Commission for Controlling Desert Locust in the Central Region
AELGA	Assistance for Emergency Locust Grasshopper Abatement	CTE	<i>Chortoicetes terminifera</i> (Australian plague locust)
AFCS	Armyworm Forecasting and Control Services, Tanzania	DDLC	Department of Desert Locust Control
AfDB	African Development Bank	DLCO-EA	Desert Locust Control Organization for Eastern Africa
AGRA	Agricultural Green Revolution in Africa	DLMCC	Desert Locust Monitoring and Control Center, Yemen
AME	<i>Anacridium melanorhodon</i> (Tree Locust)	DMA	<i>Dociostaurus maroccanus</i> (Moroccan Locust)
APLC	Australian Plague Locust Commission	DPPQS	Department of Plant Protection and Quarantine Services, India
APLC	Australian Plague Locust Commission	DPV	Département Protection des Végétaux (Department of Plant Protection)
	Bands groups of hoppers marching pretty much in the same direction	ELO	EMPRES Liaison Officers –
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa	EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases
CABI	Center for Agriculture and Biosciences International	EOR	Eastern SGR Outbreak Region
CAC	Central Asia and the Caucasus	ETOP	Emergency Transboundary Outbreak Pest
CBAMFEW	Community-based armyworm monitoring, forecasting and early warning	Fledgling	immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully developed reproductive organs to breed
CERF	Central Emergency Response Fund	GM	GreenMuscle® (a fungal-based biopesticide); NOVACRID, Green Guard
CIT	<i>Calliptamus italicus</i> (Italian Locust)	ha	hectare (= 10,000 sq. meters, about 2.471 acres)
CLCPRO	Commission de Lutte Contre le Criquet Pèlerin dans la Région Occidentale (Commission for the Desert Locust Control in the Western Region)	ICAPC	IGAD's Climate Prediction and Application Center
CNLA(A)	Centre National de Lutte Antiacridienne (National Locust Control Center)	IGAD	Intergovernmental Authority on Development (Horn of Africa)
COR	Central SGR Outbreak Region	IRIN	Integrated Regional Information Networks
CPD	Crop Protection Division	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	SCA	<i>Schistocerca cancellata</i> (South American Locust)
Hoppers	young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)	SFR	<i>Spodoptera frugiperda</i> (SFR) (Fall armyworm (FAW))
JTWC	Joint Typhoon Warning Center	SGR	<i>Schistoseca gregaria</i> (the Desert Locust)
Kg	Kilogram (~2.2 pound)	SPI	<i>Schistocerca piceifrons piceiferons</i> (Central American Locust)
L	Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)	SSD	Republic of South Sudan
LCC	Locust Control Center, Oman	SPB	Southern Pine Beetle (<i>Dendroctonus frontalis</i>) – true weevils
LMC	<i>Locusta migratoriacapito</i> (Malagasy locust)	SWAC	South West Asia DL Commission
LMI	<i>Locusta migratoria migratorioides</i> (African Migratory Locust)	PBB	Pine Bark Beetle
LPA	<i>Locustana pardalina</i>	PSPM	Preparedness, Strategic Planning and Mitigation (formerly known as Technical Assistance Group - TAG)
MoAFSC	Ministry of Agriculture, Food Security and Cooperatives	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.
MoAI	Ministry of Agriculture and Irrigation	UF	University of Florida
MoARD	Ministry of Agriculture and Rural Development	USAID	the United States Agency for International Development
NALC	National Agency for Locust Control	UN	the United Nations
NCDLC	National Center for the Desert Locust Control, Libya	WOR	Western SGR Outbreak Region
NOAA (US)	National Oceanic and Aeronautic Administration	ZEL	<i>Zonocerus elegans</i> , the elegant grasshopper
NPS	National Park Services	ZVA	<i>Zonocerus variegatus</i> , 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
NSD	Republic of North Sudan		
NSE	<i>Nomadacris septemfasciata</i> (Red Locust)		
OFDA	Office of U.S. Foreign Disaster Assistance		
PBB	Pine Bark Beetle (<i>Dendroctonus sp.</i> – 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	<i>Quelea species</i> (Red Billed Quelea bird)		
SARCOF	Southern Africa Region Climate Outlook Forum		

Point of Contact:

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<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-PPP
<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>

FAW management animation SAWBO
<https://sawbo-animations.org/video.php?video=//www.youtube.com/embed/5rxlpXEK5g8>

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

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

FAO NURU FAW Application

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

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>

<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-Armworm-Evidence-Note-September-2017.pdf>

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>