

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

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹): In the Central Outbreak Region (COR) the SGR numbers continued progressively declining in Ethiopia and Kenya and Somalia due to intensive control operations and delays in the seasonal rains although swarms continued forming in the NE and NW parts of Somalia during March. Control operations treated 13,366 ha in Ethiopia, 1,184 ha in Kenya, and 12,396 ha in Somalia during this month. Hopper bands formed from remnant swarms in northeast Tanzania where control operations treated 236 ha (plus 1200 ha). In Sudan, control operations treated 7,487 ha and egg laying, hatching and band formations continued on the Red Sea coast. In Eritrea, the situation remained relatively calm and hoppers were treated on just 100 ha in the central coastal areas. Egg laying, hatching and band formations continued in the interior of Saudi Arabia and control operations treated 50,120 ha. A few mature swarms crossed over to Kuwait and southwestern Iran. Scattered adults were reported in Egypt and Yemen. Low numbers of solitary adults were reported in Algeria and Morocco in the western break region (WOR). The eastern outbreak region (EOR) remained calm and only a few mature swarms that arrived from Saudi Arabia reached southwestern part of Iran and controlled on 1,521 ha.

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

Forecast: In COR, where swarm maturation has been delayed in Ethiopia and Kenya due to dry conditions, a progressive decline in the scale of the upsurges in the Horn is likely if delay in the seasonal rains continues and aggressive control interventions are launched. In Saudi Arabia, hot and dry conditions will likely reduce the scale of hatching and band formation, but immature groups and small swarms will likely form in the interior of the country. In Sudan, hopper bands, adults and small swarms are likely to form on the central coast and later move inland. In Yemen, adult locusts will migrate from coastal areas to the interior of the country. Other countries in the region will likely remain calm during the forecast period. In WOR, small-scale breeding may commence south of the Atlas Mountains in Morocco and central Algeria. In EOR, hatching and band formation are likely in southwest Iran and small-scale breeding will occur in southeastern part of the country adjacent areas in southwest Pakistan during the forecast period. <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 remained calm during the month.

African Migratory Locust: *Locusta migratoria migratorioides* (**LMI**): LMI continued appearing in southern Africa region.

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): DMA, CIT and LMI activities were not reported in CAC during this month.

Fall Armyworm (*Spodoptera frugiperda*) (**FAW**): FAW was reported attacking maize in Kenya, Tanzania, and Zimbabwe and perhaps elsewhere.

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

Quelea spp. (QSP): QSP outbreaks were reported on small grain cereals and controlled in Ethiopia and 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): Dans la région centrale de l'épidémie (COR), les effectifs de SGR ont continué de diminuer progressivement en Éthiopie, au Kenya et en Somalie en raison des opérations de lutte intensives et des retards dans les pluies saisonnières, bien que des essaims

aient continué à se former dans les parties nord-est et nord-ouest de la Somalie en mars. Les opérations de lutte ont traité 13 366 ha en Éthiopie, 1 184 ha au Kenya et 12 396 ha en Somalie au cours de ce mois. Des bandes larvaires se sont formées à partir d'essaims restants dans le nord-est de la Tanzanie, où les opérations de lutte ont traité 236 ha (plus 1 200 ha). Au Soudan, les opérations de lutte ont traité 7 487 ha et la ponte, l'éclosion et la formation de bandes se sont poursuivies sur la côte de la mer Rouge. En Érythrée, la situation est restée relativement calme et les larves ont été traitées sur seulement 100 ha dans les zones côtières centrales. La ponte, l'éclosion et la formation de bandes se sont poursuivies à l'intérieur de l'Arabie saoudite et les opérations de lutte ont traité 50 120 ha. Quelques essaims matures ont traversé le Koweït et le sud-ouest de l'Iran. Des ailés épars ont été signalés en Égypte et au Yémen. De faibles effectifs d'ailés solitaires ont été signalés en Algérie et au Maroc dans la région de la fracture occidentale (WOR). La région est restée calme et seuls quelques essaims matures arrivés d'Arabie saoudite ont atteint la partie sud-ouest de l'Iran et contrôlés sur 1 521 ha. <http://www.fao.org/ag/locusts/en/info/info/index.html>

Prévisions: Au COR, où la maturation des essaims a été retardée en Éthiopie et au Kenya en raison de conditions sèches, un déclin progressif de l'ampleur des poussées dans la corne est probable si le retard des pluies saisonnières se poursuit et si des interventions de lutte agressives sont lancées. En Arabie saoudite, des conditions chaudes et sèches réduiront probablement l'ampleur des éclosions et de la formation de bandes, mais des groupes immatures et de petits essaims se formeront probablement à l'intérieur du pays. Au Soudan, des bandes larvaires, des ailés et de petits essaims se formeront probablement sur la côte centrale et se déplaceront plus tard vers l'intérieur des terres. Au Yémen, les criquets adultes migreront des zones côtières vers l'intérieur du pays. D'autres pays de la région resteront probablement calmes au cours de la période de prévision. Dans le WOR, une reproduction à petite échelle peut commencer au sud des montagnes de l'Atlas au Maroc et au centre de l'Algérie. Dans l'EOR, des éclosions et la formation de bandes sont probables dans le sud-ouest de l'Iran et une reproduction à petite échelle aura lieu dans le sud-est du pays dans les zones adjacentes du sud-ouest du Pakistan au cours de la période de prévision. <http://www.fao.org/ag/locusts/en/info/info/index.html>

Criquet nomade (*Nomadacris septemfasciata*) (NSE): NSE est restée calme au cours du mois.

Criquet migrateur africain: *Locusta migratoria migratorioides* (LMI): LMI a continué d'apparaître dans la région de l'Afrique australe.

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 le SPI a persisté en Amérique centrale.

Criquet d'Amérique du Sud, *Schistocerca cancellata* (SCA): Aucune mise à jour n'a été reçue au moment de la rédaction de ce bulletin.

Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI): les activités DMA, CIT et LMI n'ont pas été signalées dans la CAC au cours de ce mois.

Chenille Légionnaire d'automne (*Spodoptera frugiperda*) (FAW): La FAW a été signalée attaquant le maïs au Kenya, en Tanzanie et au Zimbabwe et peut-être ailleurs.

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

***Quelea spp. oiseaux* (QSP):** Des épidémies de QSP ont été signalées sur les céréales à petites céréales et contrôlées en Ethiopie et en Tanzanie.

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 / 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 showers were reported during the 2nd dekad of March in Marsabit and Turkana in Kenya, in southern parts of SNNP and Oromia regions, along the Amhara Mountains and Harar Highlands in Ethiopia where annual vegetation

began greening. In Sudan, vegetation was drying out along both sides of the Red Sea coasts and conditions were favorable only in the central and southern coasts of the Red Sea and in areas close to irrigated schemes in the Nile Valley. Ecological conditions were drying out on the Red Sea coasts in Eritrea and along the coastal plains. In Yemen, significant rain was not reported in winter breeding areas on coastal areas along the Red Sea and Gulf of Aden plains ecological conditions remained unfavorable during March. Most breeding areas in the interior of Saudi Arabia remained unfavorable and some were unusually hot and dry; only a few places between Riyadh and Hail that received rain during the previous months remained favorable (FAO-DLIS, DLMCC/Yemen, LLC/Oman, SPV/Djibouti, PPD/Eritrea, PPD/Ethiopia, PPD/Sudan, NOAA).

During the past 7 days (from late March to early April), rainfall was slightly below-average over parts of Ethiopia and Kenya above-average over southern Uganda, and northern and eastern Tanzania. In Southern Africa, rainfall was slightly above-average over parts of Angola, northwestern Namibia, and parts of western Botswana and slightly below-average over Zambia, much of Botswana, Zimbabwe, Mozambique, South Africa and Madagascar (NOAA)

During the past 30 to 90 days (January through March), in East Africa, below-average rainfall was observed over parts of Ethiopia, southern South Sudan, Uganda, Rwanda, Burundi, Kenya, and parts of Tanzania.

Forecast: For weeks 1 and 2, there is a moderate to high chance (over 70%) for rainfall to exceed 50 mm over Equatorial Guinea, Gabon, parts of eastern and

southern DRC, Rwanda, Burundi, and much of Tanzania.

In EOR, light to moderate rains fell during the 1st half of March in some coastal and subcoastal areas of southwest Iran and in the interior of Baluchistan Pakistan near Khuzdar and Nushki during the 2nd half of the month. Consequently, ecological conditions could become favorable for breeding in southwest Iran and in parts of the interior of Baluchistan (FAO-DLIS).

In WOR, insignificant rain fell in the region during March. In Algeria, light showers fell in the northwest near Bechar, in parts of the central Sahara near In Salah, and in the Hoggar Mountains where runoff could occur on its edges that may lead to favorable breeding conditions in some places near Tamanrasset and Illizi, but ecological conditions remained generally unfavorable for SGR to breed in most of the areas that were surveyed although pockets of greenery were observed in a few places in central Sahara. In Morocco, March was generally stable with fairly cold weather and light to moderate showers in several areas and vegetation was green along the southern side of the Atlas Mountains in the Draa and Ziz-Ghris valleys, but soil moisture remained dry (ANLA/Chad, CNLAA/Morocco, CNLAA/Mauritania, CNLP/Mali, FAO-DLIS, DPV/Tunisia).

In the NSC regions, during the past 30 to 90 days, moderate to heavy rains resulted in moisture surpluses over eastern Zambia, Malawi, northern Mozambique, and portions of northern Madagascar. Rainfall was also above-average over local areas in Angola, Namibia, Botswana and Southern Africa. In contrast, persistent light rains sustained moisture deficits over pockets

of Angola, western Namibia, western Zambia, Botswana, Zimbabwe, portions of South Africa, southern Mozambique, and southern Madagascar. Most parts of Tanzania received moderate to heavy rains from the 2nd dekad of March where heavy rains were reported in the northeastern highlands, northern coast, Zanzibar Island, Lake Victoria basin, and Morogoro, Singida and Kagera regions. Flooding and strong winds caused severe damage to houses, roads and bridges in Tanzania and overall normal to above normal rainfall was reported in several NSE countries (NOAA, DLCO-EA, IRLCO-CSA).

CAC Region: Most of CAC remained cool and dry and significant precipitation was not reported.

ETOP increased appearance and climate factors

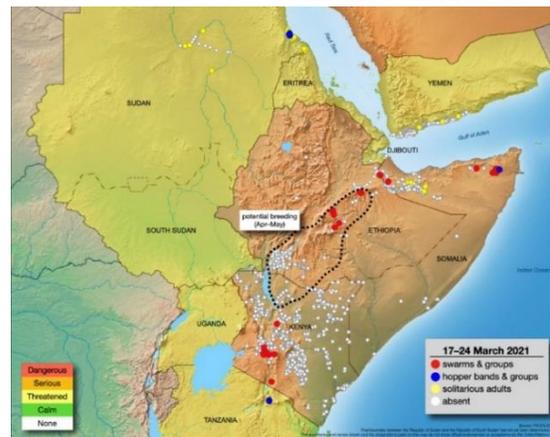
Note: Changes in the weather pattern such as increased or decreased temperatures and precipitation can contribute to an ecological shift in ETOP habitats and could increase or decrease the risk of pest outbreaks, resurgence and/or emergence of new pests. The extended ETOP appearance, prevalence, outbreaks 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 the central outbreak region (COR), the SGR maturation and numbers continued progressively declining in Ethiopia and Kenya due to intensive control operations and delays in the seasonal rains; more swarms continued forming in the NE and NW parts of Somalia during March. Control operations treated 13,366 ha in Ethiopia, 1,184 ha in Kenya, and 12,396 ha in Somalia during this month (*NOTE: Areas that were treated weekly from January to April 2021 showed a dramatic decrease - 48,332 to 600 ha in Ethiopia, 13,924 to 27 in Kenya and 16,578 to 912 in Somalia (FAO-DLIS).*)



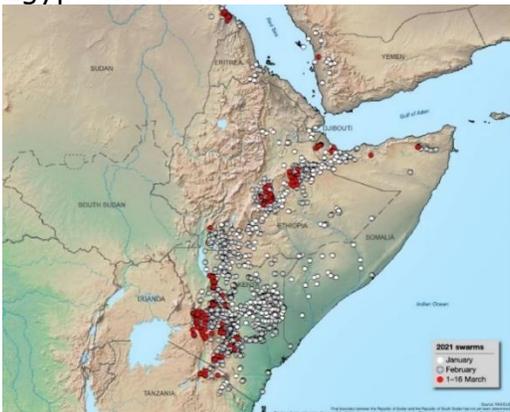
SGR situation and forecast March 14-24, FAO-DLIS

Immature swarms from Kenya that reached northeast Tanzania and matured and formed hoppers. According to DLCO-EA, aerial and ground control teams treated maturing and egg laying swarms as well as hopper bands in Simanjiro, Longido (0244S/3642E), Siha and Engaruka ward in Mondul districts, in

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

Arusha region (0322N/3642E) of Tanzania.

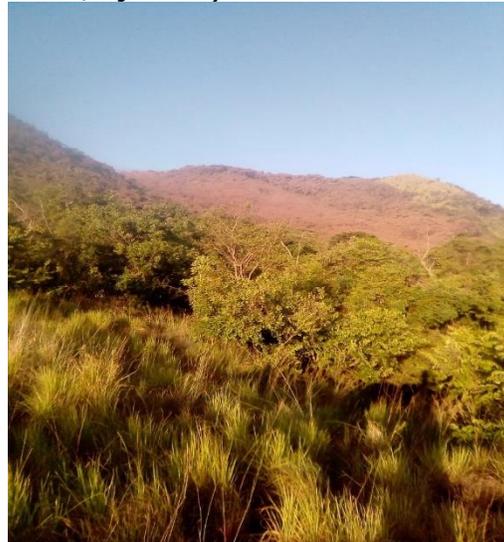
A DLCO-EA aircraft sprayed 1,200 ha with Fenitrothion 96% ULV from 3-18 March. In addition, an FAO spray plane treated 236 ha (Note: swarms first arrived from southeast Kenya during early January and by mid-February, additional swarms arrived). In Sudan, egg laying, hatching and band formations continued on the Red Sea coast and control operations treated 7,487 ha. In Eritrea, the situation remained relatively calm and hoppers were treated on 100 ha in the central coastal areas. Egg laying, hatching and band formations continued in the interior of Saudi Arabia and control operations treated 50,120 ha; a few mature swarms crossed over to Kuwait and southwestern Iran. Scattered adults were reported in Egypt and Yemen.



SGR presence in the Horn, March 2021, FAO-DLIS

In Yemen, survey operations were conducted in winter breeding areas on the Red Sea coastal plains of Hodeida and Hajjah governorates and in some parts of the western highlands West of Sana'a, and on Gulf of Aden and the coastal plains of Arabian Seas in Lahijj, Abyan and Shabwah governorates. Low numbers of scattered immature and mature solitary adults were detected between Abs and Bait Al Faqih districts on the Red Sea coasts and in Lahijj, Abyan and Shabwah governorates on coastal plains

in Gulf of Aden. On March 5th, an immature swarm was confirmed coming from the western direction and flying in Aljr area northwest of Abs district. Financial and material supports for the survey operations were provided by FAO. Control operations were not possible in Yemen due to beehives, security (DLCO-EA, DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Eritrea, PPD/Sudan, SPPV/Djibouti).



Immature adult swarms (pick area) roosting on shrubs and trees in Kiera Hills in Tharaka, Kenya (1/31/2021)

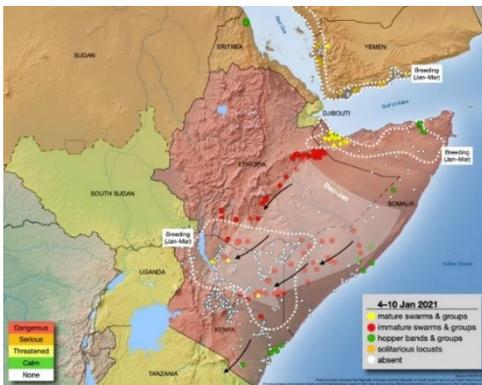
Forecast: Ethiopia, Kenya, and Somalia will likely experience a further decline in the number of swarms, although maturation and breeding may commence in areas that received some rain the past few days. Hoppers may develop and fledge during the third dekad of April west of Arusha to Mt. Kilimanjaro where undetected breeding may occur and form immature adults and a few small swarms and move northwards. Hatching and band formation are likely in the interior of Saudi Arabia, but the unusually hot and dry prevailing condition will likely limit the scale; however, immature groups and small swarms could still form during the forecast period. In Sudan, hopper bands, adult groups and perhaps, small swarms

will form on the central coast and move inland. In Yemen, adult locusts from coastal areas will likely migrate to the interior of the country. Significant developments are not likely elsewhere in the region during the forecast period.

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



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



SGR in eastern Africa and the Red Sea coastal areas during the first dekad of January (FAO-DLIS)

SGR - EOR: EOR region remained generally calm except a few mature swarms that arrived from Saudi Arabia invaded southwestern part of Iran and control operations treated 1,521 ha (BHA/TPQ, FAO-DLIS).

Forecast: In EOR, hatching and band formation will occur in southwest Iran and small-scale breeding is likely in the southern part of the country as well as and southwest Pakistan provided the seasonal rains commence during the forecast period (FAO-DLIS).

SGR – WOR: In WOR, ground surveillance detected insignificant numbers of mature, solitary adults in the south and southeastern parts of Morocco and Algeria during March. No locusts were reported in Mali, Mauritania, Chad or Tunisia and no reports were received from other countries in the region during this month (ANLP/Chad, CNLCP/Mali, CNLAA/Mauritania, CNLAA/Morocco, FAO-DLIS).

Forecast: In WOR, isolated locusts will likely persist in northwest Mauritania, northern Mali and Niger, and Morocco and small-scale breeding could occur south of the Atlas Mountains, but overall, the situation will remain clam in the region 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 situation remained relatively calm however, ecological conditions continued to be favorable in some of the primary outbreak areas - Ikuu-Katavi, Malagarasi Basin, Rukwa Valley in Tanzania; Lake Chilwa plains in Malawi and the Kafue Flats in Zambia and locusts may have develop during March and perhaps the

previous month where surveillance was not effected (IRLCO-CSA).

Forecast: Swarms and group formations will likely occur in primary outbreak areas in Malawi, Mozambique, Tanzania and Zambia where successful breeding is expected to have occurred during the past several weeks. Intensive surveillance and control operations are recommended to abate any further developments and invasions (BHA/TPQ, IRLCO-CSA).

African Migratory Locust (LMI, AML):

Although intensive surveillance and control operations reduced LMI populations in Botswana, Namibia and Zambia during early December 2020, favorable ecological conditions (rainfall, vegetation, etc.) allowed substantial populations to persist and breed and form high density hoppers in Botswana, Namibia, Zambia and Angola. Heavy rains and flooding prevented access to affected areas and conventional control operations are limited to areas that are not designated as sensitive (wetland, game reserves, etc.). In Zambia, ground survey undertaken in Sesheke, Mwandia, Sioma districts MinAgri extension staff revealed presence LMI hoppers and fledglings on pasture and maize; ground control with motorized sprayers was undertaken using Malathion E.C. (FAO-ROS, IRLCO-CSA).

Forecast: Due to favorable ecological conditions from above-normal rainfall, breeding will likely continue requiring extensive control operations in Botswana, Namibia, Zambia, Angola, etc. Intensive surveillance and timely control operations remain critical to prevent significant damage to crops and grazing

land in the region (BHA/FSL, FAO-ROS, IRLCO-CSA).

Note: FAO Southern Africa Regional office-led Regional Locust Response and Resilience project is being implemented in the region. FAO continues working with SADC, MoAs, IRLCO-CSA, donors and other stakeholders to help address the AML threat to food security and livelihoods of millions of people across the region (FAO/Southern Africa).

Central American Locust -

Schistocerca piceifrons (SPI): No update was received at the time this bulletin was compiled though the pest presence if likely.

[**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. The pest may be present in neighboring areas in Bolivia, Uruguay and/or perhaps Paraguay.

<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 the weather conditions improves (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): FAW outbreaks were reported in Bomet and Bungoma

counties of Kenya and in Mbogwe, Dodoma Municipal, Iramba, Kilindi, Simanjiro and Bahi districts of Tanzania. Control was carried out by the affected farmers with technical assistance from the MoA extension staff. In Zimbabwe, FAW outbreaks were reported in Midland, Mashonaland Central, Mashonaland East, Mashonaland West, Manicaland and Mashvingo Provinces. The pest was reported attacking mainly late planted maize. Control was carried out by the affected farmers with technical and material assistance (Pesticides) from the MoAMID. FAW may be present in other regions where updates were not available at the time this bulletin was compiled (BHA/TPQ, DLCO-EA, IRLCO-CSA, FAO-FAW).

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 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 (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.



(source: Prasanna, 2021)

Areas suitable to Fall Armyworm

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

ENVIRONMENTAL SUITABILITY INDEX

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



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

REUTERS

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).

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 large numbers of small-scale farming communities in affected countries with the intention to scale-up across different FAW prone regions. This initiative will build on experiences gained over the past several years, including Legacy OFDA and RFS sponsored initiatives and other relevant findings.

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, DLCO-EA, IRLCO-CSA).

Forecast: AAW is unlikely to appear or cause any significant damage during the forecast period (BHA/TPQ, DLCO-EA).

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): In Ethiopia, aerial operations were conducted against QSP outbreak in the southern Rift Valley and additional information has yet to be received. In Tanzania, QSP outbreaks were reported in irrigated rice and sorghum fields in 4 districts in Lake

Victoria, and 2 districts in central zones, and a DLCO-EA aircraft controlled the pest in Kondo and Chamwino district in Dodoma region; control operations continued in other parts of the country through the end of March (DLCO-EA, IRLCO-CSA).

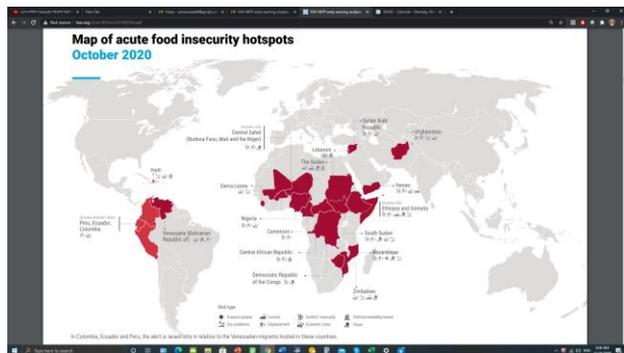
Forecast: QSP outbreaks are likely to continue being a problem to small grain cereal growers in several regions of Tanzania, Ethiopia, Kenya and Zimbabwe and elsewhere where rainfed and and/or irrigated small grain crops are in the field. Routine surveillance and timely control interventions remain critical to prevent major crop damage (BHA/TPQ, DLCO-EA, IRLSO-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.

OFDA’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 March, control operations treated 87,611 ha in total (nearly a 4th of the areas treated in previous month) (13,366 ha in Ethiopia, 1,184 ha in Kenya, and 12,396 ha in Somalia, 1,200 +236 ha in Tanzania, 7,487 ha in Sudan, 100 ha in Eritrea, 50,120 ha in Saudi Arabia); and 1,521 ha in Iran (DLCO-EA, FAO-DLIS, PPD/Ethiopia, PPD/Eritrea and PPD/Sudan).

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

Country	Quantity, l/kg*
Algeria	1,186,034~
Chad	34,100
Egypt	10,253 ULV, 45,796
Eritrea	14,150
Ethiopia	110,543~
Libya	24,930~
Kenya	~
Madagascar	206,000~ + 100,000 ^D
Mali	3,540
Mauritania	39,803
Morocco	3,412,374 ^D
Niger	75,701~
Oman	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 = <i>Green Muscle</i> TM (fungal-based biological pesticide, e.g., NOVACRID)	

LIST OF ACRONYMS

AAW	African armyworm (<i>Spodoptera expempta</i>)
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	<i>Anacridium melanorhodon</i> (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
CABI	Center for Agriculture and Biosciences International
CAC	Central Asia and the Caucasus

CBAMFEW	Community-based armyworm monitoring, forecasting and early warning	GM	GreenMuscle® (a fungal-based biopesticide); NOVACRID, Green Guard
CERF	Central Emergency Response Fund	ha	hectare (= 10,000 sq. meters, about 2.471 acres)
CIT	<i>Calliptamus italicus</i> (Italian Locust)	ICAPC	IGAD's Climate Prediction and Application Center
CLCPRO	Commission de Lutte Contre le Criquet Pélerin dans la Région Occidentale (Commission for the Desert Locust Control in the Western Region)	IGAD	Intergovernmental Authority on Development (Horn of Africa)
CNLA(A)	Centre National de Lutte Antiacridienne (National Locust Control Center)	IRIN	Integrated Regional Information Networks
COR	Central SGR Outbreak Region	IRLCO-CSA	International Red Locust Control Organization for Central and Southern Africa
CPD	Crop Protection Division	ITCZ	Inter-Tropical Convergence Zone
CRC	Commission for Controlling Desert Locust in the Central Region	ITF	Inter-Tropical Convergence Front = ITCZ)
CTE	<i>Chortoicetes terminifera</i> (Australian plague locust)	FAO-DLIS	Food and Agriculture Organizations' Desert Locust Information Service
DDLC	Department of Desert Locust Control	Hoppers	young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)
DLCO-EA	Desert Locust Control Organization for Eastern Africa	JTWC	Joint Typhoon Warning Center
DLMCC	Desert Locust Monitoring and Control Center, Yemen	Kg	Kilogram (~2.2 pound)
DMA	<i>Dociostaurus maroccanus</i> (Moroccan Locust)	L	Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)
DPPQS	Department of Plant Protection and Quarantine Services, India	LCC	Locust Control Center, Oman
DPV	Département Protection des Végétaux (Department of Plant Protection)	LMC	<i>Locusta migratoriacapito</i> (Malagasy locust)
ELO	EMPRES Liaison Officers –	LMI	<i>Locusta migratoria migratorioides</i> (African Migratory Locust)
EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases	LPA	<i>Locustana pardalina</i>
EOR	Eastern SGR Outbreak Region	MoAFSC	Ministry of Agriculture, Food Security and Cooperatives
ETOP	Emergency Transboundary Outbreak Pest	MoAI	Ministry of Agriculture and Irrigation
Fledgling	immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully developed reproductive organs to breed	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	<i>Nomadacris septemfasciata</i> (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 gregaria* (South American Locust)

SFR *Spodoptera frugiperda* (SFR) (Fall armyworm (FAW))

SGR *Schistocerca 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)

Triangulation The process whereby pesticides are donated by a country, with large inventories, but often no immediate need, to a country with immediate need with the help of a third party in the negotiation and shipments, etc. Usually FAO plays the third-party role in the case of locust and other emergency pests.

UF University of Florida

USAID the United States Agency for International Development

UN the United Nations

WOR Western SGR Outbreak Region

ZEL *Zonocerus elegans*, the elegant grasshopper

ZVA *Zonocerus variegatus*, the variegated grasshopper, is emerging as a relatively new dry season pest, largely due to the destruction of its natural habitat through deforestation, land clearing, etc. for agricultural and other development efforts and due to climate anomalies

Point of Contact:

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<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/jsc/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/code/>

<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/5rxlpXEK5q8>

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/itc.shtml>