

Emergency Transboundary Outbreak Pest (ETOP) Situation Bulletin for June 2020 with a forecast through mid-August
résumé en français est inclus

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹): The desert locust situation remained extremely worrisome in the central (COR) and eastern (EOR) outbreak regions in June. In **East Africa**, significant populations of hoppers and swarms continue developing and control operations treated 75,219 ha in **Ethiopia**, 30,813 ha in **Kenya** and 19,029 ha in **Somalia** during June. Breeding was reported along the Red Sea coasts in **Yemen** and **Saudi Arabia** and in western **Oman**. In the eastern outbreak region (EOR), locusts that migrated from southern **Iran** and **Pakistan** reached along the Indo-Pakistan borders. Some swarms that arrived in Rajasthan, India further spread to the northern states and a few reached eastern Nepal during June. Control operations treated 72,109 ha in **India**, 67,689 ha **Iran**, 47,198 ha in **Pakistan** and 2,645 ha in **Afghanistan** during June. The western outbreak region (WOR) remained calm and only 86 ha were treated near irrigated areas in **Algeria** during this month.

Forecast: Swarms from Kenya will move north to Ethiopia, South Sudan and later reach Sudan. A few swarms may remain in Kenya for a couple of weeks or so and threaten crops. Breeding will increase hopper and swarm formations in eastern and northern Ethiopia and northern Somalia. Swarms from Yemen will likely arrive in eastern Ethiopia and northern Somalia from July. Swarms from Ethiopia and Kenya will arrive in Sudan and spread westward and reach WOR unless ecological conditions in breeding areas in the country are favorable. In EOR, breeding is expected to intensify along the Indo-Pakistan borders with swarms that arrived from spring breeding areas and some from the Horn of Africa compounded by local populations. In WOR, breeding may begin at the onset of summer rains. Cognizant of the severity of the ongoing locust invasions and the threats they could pose to food security and livelihoods of tens of millions of people, donors and international partners generously responded to the UN/FAO appeal <https://locust-hub-hqfao.hub.arcgis.com/>. The supports from Donors and international organizations have been instrumental in strengthening coordination, preparedness and in assisting host countries intensify surveillance, monitoring, and control. It is critical that all SGR affected countries remain vigilant and maintain surveillance, monitoring and control interventions. Development and humanitarian partners are encouraged to maintain their generosity to help reduce locust invasions and minimize impacts on food security and livelihoods of tens of millions of vulnerable peoples and communities amidst the rapidly spreading COVID-19 pandemic.

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

Red (Nomadic) Locust (*Nomadacris septemfasciata*) (**NSE**): No update was received at the time this Bulletin was compiled. However, it is likely that NSE populations that fledged last month have concentrated in areas of green vegetation and forming swarmlets soon to invade nearby cropping areas.

African Migratory Locust: *Locusta migratoria migratorioides* (**LMM**): LMM outbreaks was not reported during this month.

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

Central American Locust, *Schistocerca piceiferons* (**CAL**): No update was received at the time this bulletin was compiled.

South American Locust, *Schistocerca cancellata* (**SCA**): SCA outbreaks were reported in Argentina, Brazil and Uruguay during June.

Italian (CIT), Moroccan (DMA), and Asian Migratory Locusts (LMI): DMA, CIT and LMI appearance and control operations are expected to have continued in CAC region during June.

Fall Armyworm (*Spodoptera frugiperda*) (**FAW**): FAW was reported in China, Tanzania, Viet Nam and it is likely that the pest was present elsewhere in maize and other cereal growing areas during this month.

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

Quelea spp. (QSP): QSP outbreaks were reported in Keya, Tanzania and Uganda during this month.

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): La situation relative au criquet pèlerin est restée extrêmement préoccupante dans les régions centrales (COR) et orientales (EOR) en juin. En Afrique de l'Est, d'importantes populations de larves et d'essaims continuent de développer et de contrôler des opérations qui ont traité 75 219 ha en Éthiopie, 30 813 ha au Kenya et 19 029 ha en Somalie en juin. Une reproduction a été signalée le long des côtes de la mer Rouge au Yémen et en Arabie saoudite et dans l'ouest d'Oman. Dans la région orientale de l'épidémie (EOR), des criquets qui ont migré du sud de l'Iran et du Pakistan ont atteint le long des frontières indo-pakistanaïses. Certains essaims arrivés au Rajasthan, en Inde, se sont ensuite étendus aux États du nord et quelques-uns ont atteint l'est du Népal en juin. Les opérations de lutte ont traité 72 109 ha en Inde, 67 689 ha en Iran, 47 198 ha au Pakistan et 2 645 ha en Afghanistan en juin. La région de l'épidémie de l'ouest (WOR) est restée calme et seulement 86 ha ont été traités près des zones irriguées en Algérie au cours de ce mois.

Prévisions: Des essaims du Kenya se déplaceront vers le nord en Éthiopie, au Soudan du Sud et atteindront plus tard le Soudan. Quelques essaims peuvent rester au Kenya pendant quelques semaines environ et menacer les cultures. La reproduction augmentera les formations de larves et d'essaims dans l'est et le nord de l'Éthiopie et le nord de la Somalie. Des essaims en provenance du Yémen arriveront probablement dans l'est de l'Éthiopie et le nord de la Somalie à partir de juillet. Des essaims d'Éthiopie et du Kenya arriveront au Soudan et se répandront vers l'ouest et atteindront WOR à moins que les conditions écologiques dans les zones de reproduction du pays ne soient favorables. Dans l'EOR, la reproduction devrait s'intensifier le long des frontières indo-pakistanaïses avec des essaims venus des zones de reproduction printanière et certains de la Corne de l'Afrique, composés de populations locales. Dans WOR, la reproduction peut commencer au début des pluies d'été. Conscient de la gravité des invasions acridiennes en cours et des menaces qu'elles pourraient représenter pour la sécurité alimentaire et les moyens de subsistance de dizaines de millions de personnes, les donateurs et les partenaires internationaux ont généreusement répondu à l'appel de l'ONU / FAO <https://locust-hub-hqfao.hub.arcgis.com/>. Le soutien des donateurs et des organisations internationales a contribué à renforcer la coordination, la préparation et à aider les pays hôtes à intensifier la surveillance, le suivi et le contrôle. Il est essentiel que tous les pays affectés par les RGS restent vigilants et maintiennent des interventions de surveillance, de suivi et de contrôle. Les partenaires au développement et les partenaires humanitaires sont encouragés à maintenir leur générosité pour aider à réduire les invasions acridiennes et à minimiser les impacts sur la sécurité alimentaire et les moyens de subsistance de dizaines de millions de personnes et de communautés.

vulnérables au milieu de la propagation rapide de la pandémie de COVID-19. <https://locust-hub-hqfao.hub.arcgis.com/>

Criquet nomade (*Nomadacris septemfasciata*) (NSE): Aucune mise à jour n'a été reçue au moment de la rédaction de ce bulletin. Cependant, il est probable que les populations de NSE qui ont quitté le pays le mois dernier se sont concentrées dans des zones de végétation verte et forment des essaims bientôt pour envahir les zones de culture voisines.

Criquet migrateur africain: *Locusta migratoria migratorioides* (LMM): Aucune éclosion de LMM n'a été signalée au cours de ce mois.

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

Criquet Amérique centrale, *Schistocerca piceifrons piceiferons* (CAL): Aucune mise à jour n'a été reçue à la date de rédaction du présent Bulletin.

Criquet d'Amérique du Sud, *Schistocerca cancellata* (SCA): des foyers de SCA ont été signalés en Argentine, au Brésil et en Uruguay en juin.

Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI):
DMA - Les opérations d'apparition et de contrôle des CIT et LMI devraient se poursuivre dans la région CAC en juin.

Chenille Légionnaire d'automne (*Spodoptera frugiperda*) (FAW): La FAW a été signalée en Chine, en Tanzanie, au Viet Nam et il est probable que le ravageur était présent ailleurs dans le maïs et dans d'autres régions céréalières au cours de ce mois.

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

***Quelea spp. oiseaux* (QSP):** Des flambées de QSP ont été signalées à Keya, en Tanzanie et en Ouganda au cours de ce mois.

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**, during the 3rd dekad of June, from 21-30, the Inter Tropical Front (ITF) in its eastern portion of Africa (5W-35E), largely moved northward and very close to the normal position while it far western part (15W-5W) reversed southward to its previous decadal position. The mean western (10W-10E) portion of the ITF was around 16.3N (about 0.8 degree south from the normal position). Its mean eastern (20E-35E) portion was located at 15.3N (about 0.6 north from its long-term mean position). Figure 1 displays the current position of the ITF relative to the long-term climatological position during the 3rd dekad of June and its previous position during the 2nd dekad. 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 April 2020. As a result, above-average rainfall was observed over South Sudan, parts of eastern and southern Sudan, Uganda, Ethiopia, and in local areas in western Kenya (NOAA).

During June, moderate to heavy rain fell in the southern, central highlands and the western lowlands and light rain was reported in the Southern Red Sea region in Eritrea.

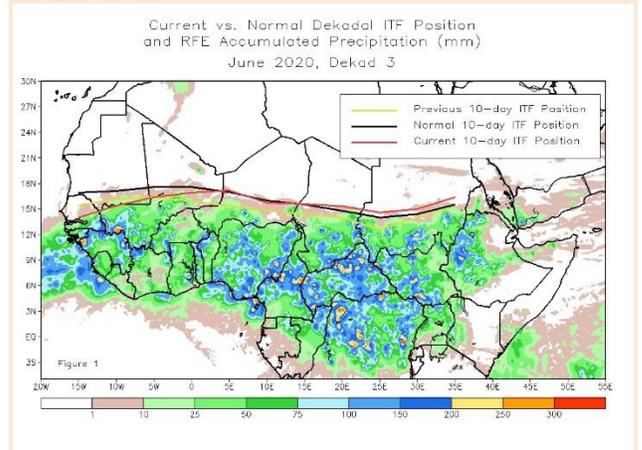


Figure 1: current position of the ITF relative to the long-term climatological position during the 3rd dekad of June and its previous position during the 2nd dekad of June (NOAA).

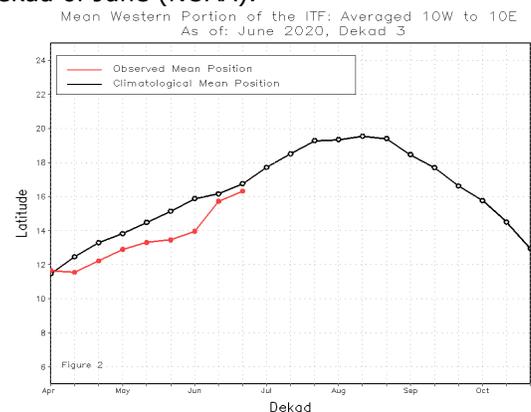


Figure 2 – Latitude value of ITF position in the western region (NOAA)

In Ethiopia, moderate to light rainfall was reported in southwestern, the southern Rift Valley, in Dire Dawa and in areas bordering northern Somalia and moderate to heavy rains were observed in the northern and northwestern parts of the

country. Light to moderate rains fell in northern Turkana County in Kenya and northern Ethiopia that extended to the southern part of the western lowlands in Eritrea. Light to moderate rains fell along the northern plateau and light rains fell near Hargeisa in Somalia.

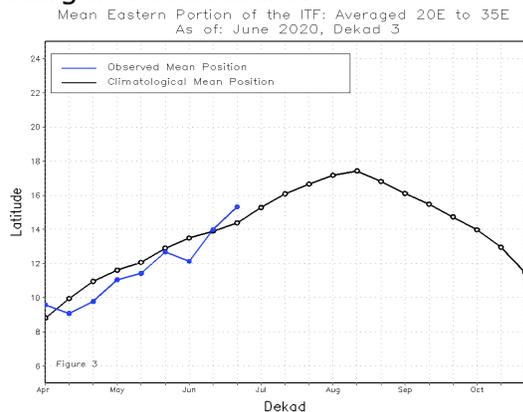


Figure 3. Latitude position of ITF in its eastern part (NOAA, 7/2020)

Strong northerly wind prevailed over Kenya, Ethiopia and Somalia switching southwesterly over northern Somalia. Light showers fell in parts of Lake Victoria zone, and northern and coast regions in Tanzania, while the rest of the country experienced dry spell. In Uganda above normal rains were reported in several places, but later declined and only the eastern and northern parts of the country continued receiving rain through end of June. In Sudan, moderate rains fell in South and West Darfur, West and South Kordofan, White Nile, Blue Nile, and Al Kadarif states during the 2nd half of the month. In Yemen, low to moderate rains fell on the Red Sea coast and coastal plains of Gulf of Aden from Lith, Saudi Arabia to Ahwar and good rains fell along the eastern coast between Sayhut and Oman border as well as the interior of the country from Bayhun to Wadi Hadhramaut (FAO-DLIS).

EOR, light showers fell in southeast Iran and pre-monsoon rain fell along both sides of the Indo-Pakistan borders in late

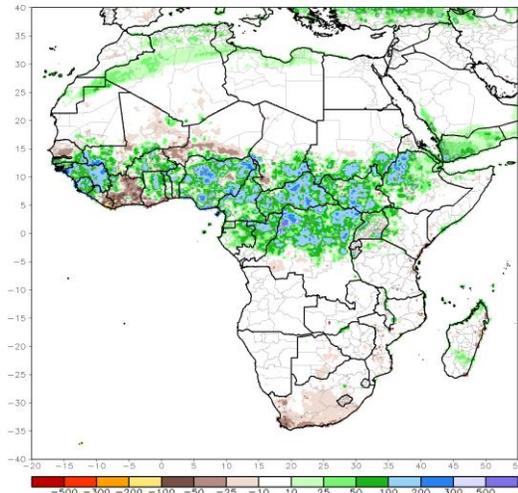
June improving breeding conditions. Strong westerly winds prevailed for several days over Madhya Pradesh after Cyclone Nisarga, the strongest cyclone in Maharashtra in India since 1891, made landfall on 4 June. Later in the month, strong southerly winds occurred over Uttar Pradesh on the 26–28th. It is to be recalled that a strong westerly wind from Cyclone Amphan prevailed over northern India during the 3rd week of May forcing locusts to spread further east and northward. Vegetation continued to dry out rapidly during June spring breeding areas along southeastern Iran and southwestern Pakistan (FAO-DLIS).

In **WOR**, during the 2nd dekad and most of the 3rd dekad of June, rainfall was above-average over many places in West and Central Africa. Good rains were reported in central Mali, northern Niger as far north as the Air Mountains, and eastern Chad, although ecological conditions remained dry in the region. Clouds generated showers and thunderstorms in places in southern and central Morocco. Ecological conditions are favorable for the survival of the SGR in the southeast and in the Draa, Ziz and Ghis valleys. Although localized rains were recorded in some places in the southern and south-eastern part of Algeria, ecological conditions remained unfavorable to allow survival and reproduction of locusts over most of Algeria except near irrigated areas (CNLAANLA/Chad, CNLA/Mauritania, CNLAA/Morocco, INPV/Algeria, CNLPA/Mali, PPD/Tunisia, FAO-DLIS, NOAA).

In the **NSE** region, light showers were recorded in parts of Lake Victoria zone, northern and coast regions in **Tanzania** while the rest of the country remained dry. In **Uganda**, near to above normal

rains were reported in several parts of the country during the first half of June. The eastern and northern parts of the country continued to record wet conditions through the end of the month while some parts of the country experienced a decline in precipitation causing vegetation drying.

RFE2 30-Day Total Rainfall Anomaly (mm)
Period: 06Jun2020 - 05Jul2020



NOAA, 7/2020

CAC Region: Although an update was not received at the time this Bulletin was compiled, the weather condition which was generally cooler and wetter in May in the Caucasus is expected to have improved during June. Warm weather is expected to have continued in the eastern part of the CA maintaining favorable conditions for locusts to further develop (FAO-PPPD).

Weather forecast: The 1st week of July will likely experience increased chance for above-average rainfall over Guinea-Bissau, Guinea-Conakry, southeastern Senegal, Sierra Leone, southwestern Mali, southern Benin, southern Nigeria, western CAR, northern Congo and northern DRC. In contrast, there is an increased chance for below-average rainfall over eastern Liberia, southern Cote d'Ivoire and southwestern Ghana.

During the 2nd week of July, there is an increased chance for above-average rainfall over Guinea-Bissau, Guinea-Conakry, Sierra Leone, southwestern Mali, western Liberia, parts of eastern Burkina Faso, western Niger, northern Benin, much of Nigeria, Cameroon, southern Chad and parts of western Sudan during the 2nd week of July. In contrast, there is an increased chance for below-average rainfall over southern Cote d'Ivoire and the neighboring areas of eastern Liberia and southwestern Ghana (NOAA).

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 ongoing SGR extended outbreaks and upsurges are also partially attributed to the change in the weather pattern – extended and above normal rainfall partly associated with 4-5 cycles that made landfall in the COR region, extending from Oman, Yemen, Southern Arabian Sea and the Horn of Africa between May 2018 to December 2019.

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

SGR – COR: The SGR situation remained extremely serious in East Africa where hoppers, groups and swarms were widespread in several places.

In **Ethiopia**, numerous hopper, bands and immature adults were detected in several places in Ogaden, Gode, Jigjiga in the Somali Administrative region, in Dire

Dawa areas, in the Afar Administrative Region in the northern Rift Valley along the eastern edge of the highlands and between Gewane and Korem. Hopper bands were also detected in a few places in the northern highlands in Amhara and Tigray Administrative regions. Immature and mature adults were reported in Tigray Admin region, some near Eritrea border. An immature swarm was reported on the northern shore of Lake Turkana in SNNPR on June 28th. Aerial and ground control treated more than 75,219 ha (30,599 ha by air) during June (FAO-DLIS).

In **Somalia**, hopper groups and bands formed on the plateau in the northwest between Boroma and Burao and in the northeast near Garowe and in Sanag areas and in the central region of Galguduud between Galkayo and Dusa Mareb. Immature swarms formed near Hargeisa, Boroma, Garowe and Galkayo, a few of which were observed maturing, there was no sign of an eastward movement yet. Control operations treated 19,029 ha (9,354 ha by air) using biopesticides during June (FAO-DLIS)

In **Kenya**, hopper bands continued to develop in Turkana and Marsabit countries and fledging occurred in Turkana, where most of the hopper bands had fledged from end of 1st dekad through the middle of the 3rd dekad and began forming immature adults that have begun moving northwest and reached northeastern Uganda. Control operations treated some 30,830 ha (8,539 ha by air) during June (FAO-DLIS).

In **Sudan**, scattered mature solitary adults were detected in the Nile Valley from Shendi to north Dongola, the Baiyuda Desert, east of Khartoum, between Kassala and Sinkat, and between Kosti and the South Sudan

border. No locusts were observed during extensive surveys in Sennar and Blue Nile states, and Kordofan and Darfur states and near the border with Chad during June (FAO-DLIS, PPD/Sudan).

No locusts were reported in **South Sudan** during June. In **Uganda**, a few dense immature swarms were reported on some 760 ha in Naput village, Moroto District on June 30th. A DLCO-EA aircraft which was on a standby in the country controlled the swarms with 360 lt of *Fenitrothion (Sumithion 96% ULV)* on July 1st (FAO-DLIS).

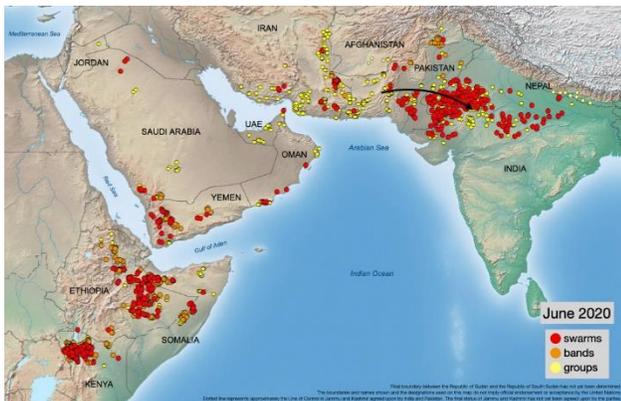
In **Djibouti**, surveys were not carried out and the situation remained calm during June (DLIO/Djibouti).

In **Eritrea** surveys were not conducted, but some small size swarmlets were observed in the western lowlands near Hagaz town in Anseba region (DLCO-EA).

In **Yemen**, breeding continued in the interior and hopper bands formed between Al Hazm and Bayhan, in Wadi Hadhramaut and on the plateau north of Sayun. Numerous immature and mature swarms formed in these areas, some of which appeared in the highlands between Sana'a and Taiz while others moved north to adjacent areas of Saudi Arabia. A few swarms were seen in the foothills near the Red Sea and Gulf of Aden coastal plains. Immature and mature solitary and gregarious adults, including some groups, were present on the southern coast near Aden, in the interior near Shabwah and on the eastern plateau between Remah and the Oman border. Ground teams treated 343 ha during this month (FAO-DLIS).

In **Saudi Arabia**, a few immature swarms were seen in the north between Al Jawf and the Iraq border and immature

groups were present north of Hail. Breeding occurred in the southwest near Najran, giving rise to hopper bands and immature adult groups. Groups of mature adults were seen laying near Wadi Dawasir during the 1st June. A few mature swarms were observed in the Asir Mountains near Khamis Mushait during the week of June. Ground control treated 5 360 ha during this month (FAO-DLIS).



FAO-DLIS, 6/2020

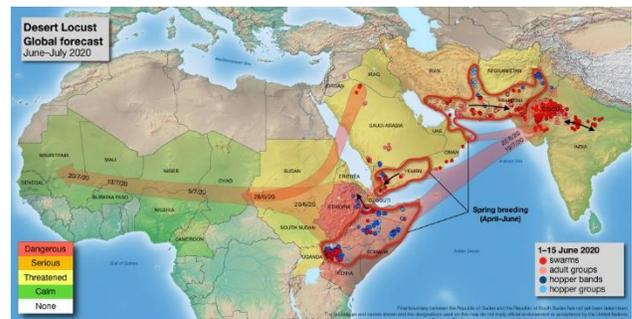
Oman, locust populations further declined in the north where scattered immature and mature solitary Adults and hoppers remained near Nizwa. A few groups of hoppers and immature adults were present in the northeast near Ras Al Hadd during the 1st week and later adults moved south along the coast or migrated across the Arabian Sea. Hatching occurred on the coast south of Salalah from earlier breeding, causing a few early instar hopper groups to form by the end of the month; 126 ha were treated by ground means during this month (FAO-DLIS).

Forecast: Swarms in northwest **Kenya** will move across **South Sudan** to **Sudan** and **Ethiopia** where breeding will occur. Limited swarm breeding in **Somalia** while other swarms will move to the northeast and to summer breeding areas along the Indo-Pakistan borders. Swarms in **Yemen** likely to move to eastern

Ethiopia and northern **Somalia**.

Breeding is likely on both sides of the Red Sea coast in **Yemen** and **Saudi Arabia**, and in **Sudan** and in western **Eritrea** during the forecast period (DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Djibouti, PPD/Sudan).

SGR - EOR: A significant decline was observed in locust presence in spring breeding areas in southeastern Iran and western Pakistan. Swarms moved from these areas to summer breeding areas along the Indo-Pakistan border. Some swarms that moved to Rajasthan, India further spread northward and reached northern states and small swarms reached the eastern lowlands of Nepal (*a very rare event perhaps attributed to climatic anomalies*). During June, control operations treated 67,219 ha in Iran, 72,109 ha in India, 47,349 ha in Pakistan and 2,645 ha in Afghanistan where breeding was observed in the southern region of the country.



FAO-DLIS 6/2020

Forecast: As vegetation is drying out in spring breeding areas along the southern coast and parts of Sistan-Baluchistan in Iran and southwest (Baluchistan) and the Indus Valley (Punjab), Pakistan adults that are forming groups and small swarms will move to the summer breeding areas along the Indo-Pakistan from Cholistan to Tharparkar until at least early July (FAO-DLIS).

SGR – WOR: In **Chad**, the locust situation remained calm. However, a few solitary, isolated adults were seen south of Amdjarass in the northeast of the country. Surveillance has commenced in Chad's eastern border with during the 2nd dekad June. WOR is calm and only a few insolated scattered adults were detected in Algeria where some 86 ha were treated near irrigated areas. An unconfirmed reported indicated that mature adults were present in northern Mali where access is limited due to security reasons. The Desert Locust situation is currently calm in Morocco and should remain so during this summer season (ANLA/Chad, CNLAP/Mali, CNLAA/Morocco, CNLA/Mauritania, CNLA/Tunisia).

Forecast: Limited breeding is likely to continue near irrigated crops in **Algeria**. There is a chance for swarms arriving in summer breeding areas from COR (**Sudan**) moving to eastern **Chad** in late July and spread further reaching **Niger, Mali** and **Mauritania** and begin breeding at the foothill of the seasonal rains that has already commenced in some places (ANLA/Chad, CNLA/Mauritania, CNLAA/Morocco, CNLAP/Mali, FAO-DLIS, INPV/Algeria).

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): No update was received at the time this Bulletin was compiled. However, it is likely that locust that fledged last month have concentrated in areas of green vegetation and formed swarmlets and

ready to invade nearby cropping areas (BHA/TPQ).

Forecast: No update was received at the time this report was compiled, however, with vegetation burning and drying up progressing, adult groups and populations will continue concentrating and forming swarms in patches of green vegetation. If left uncontrolled, the locusts will begin migrating to neighboring cropping areas.

African Migratory Locust, *Locusta migratoria migratorioides* (LMM):

Tree Locusts, *Anacridium* spp. (ASP): No infestations were reported during this month.

Central American Locust - *Schistocerca piceifrons piceifrons* (CAL): No update was received at the time this Bulletin was compiled.

South American Locust, *Schistocerca cancellata* (SAL): SAL outbreaks were reported in Argentina, Brazil and Uruguay during June.

***Tropidacris collaris* (Tucura quebrachera - TCO - grasshopper-):** No update was received at the time this Bulletin was compiled.

Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC): No update was received at the time this bulletin was compiled. However, DMA hoppers are expected to have begun forming and some fledging in Azerbaijan and Georgia. Mature and mating DMA populations are expected to have begun appearing and perhaps mating in most of the Central Asian (CA) countries. In Kyrgyzstan,

Tajikistan, and other countries in the region, COVID-19 restrictions continued severely hampering locust monitoring and control operation allowing DMA swarms migrating among CA countries. CIT hopper developments that began in May in most of the CA countries likely continued in June. In the Caucasus, CIT and DMA hopper developments that were slowed down by the cool and wet weather in May, are expected to have continued as the weather has improved during June. LMI hatching that began in Uzbekistan, Kazakhstan and Russian Federation in May is expected to have continued in June. During May, more than 607,000 ha were treated in total (50% higher than total areas treated this time in 2019). In June, this number is expected to have increased due to more hatchings, hoppers and bands formations adult locust appearing (notwithstanding the COVID-19 related restrictions)) (FAO/PPPD, BHA/TPQ/PMI).

<http://www.fao.org/locusts-cca/en/>

Forecast: DMA hopper development will continue in C region, but decline in the southern CA region. CIT will continue further developing in several places forming considerable hoppers and bands, and spread into crops requiring chemical treatments. Presence of cattle and sheep in CIT-infested areas may hamper the chemical treatments. LMI will continue developing with more hoppers and bands continue fledging and maturing and spread in the south followed during the forecast period.

Fall armyworm (FAW) was reported affecting maize in several countries in Africa, including Tanzania, Malawi and Zimbabwe. In **China**, FAW has spread across the Yangtze River and entered central China, reaching the border of Henan Province earlier this season than

previous season. The pest movement to Northern China this year has occurred at least three months earlier than last year, suggesting the likelihood of becoming a resident in China's largest corn producing region, 45% of the country's corn producing regions. By May 28, FAW had affected 178,667 hectares in 720 counties spread across 17 provinces. GoC estimates a 2.5% corn deficit due to FAW but others predict higher deficit and soaring price. Other maize growing regions across Africa, Asia, Pacific and elsewhere likely experienced FAW presence during June (DLCO-EA, IRLCO-CSA, BHA/TPQ, USDA/FAS/GAIN).

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

REUTERS

Forecast: FAW will likely 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 preventive and curative actions remain critical to abate significant crop damage (OFDA).

Recent Event on FAW: The first meeting of the Technical Committee of the Global Action for Fall Armyworm Control (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: Scaling up of the USAID/OFDA sponsored Community-Based FAW Monitoring, Surveillance and Management project (CBFAMFEW) that was implemented from September 2017 through August 2019 and exploring additional innovative intervention projects will benefit large numbers of farming communities in affected countries across different regions and is worth considering.

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 outbreaks were not reported during this month (IRLCO-CSA).

Forecast: AAW activities will likely remain calm in the primary outbreak areas during the forecast period (IRLCO-CSA, BHA/TPQ).

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.

Southern Armyworm (*Spodoptera eridania*) (SAW/SER). SAW was not reported during this month.

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

Quelea sp. (QSP): QSP infestations were reported in Narok county in Kenya where preparations for aerial control operations were planned, but the DLCO-EA spray aircraft that was to be deployed is currently engaged in SGR operations in Uganda. In Tanzania, QSP infestations were reported in Sorghum fields in Morogoro, Kilimanjaro and Manyara regions and a DLCO-EA aircraft continued spray operations in Morogoro region using Bathion 60% provided by MoA/Tanzania. In Uganda QSP infestations were reported in rice fields in Kingdom Rice scheme in Bunambutye Sub-county, Bulambuli District in the northeastern part of the Country. The pest was posing a threat to rice field on some 4,000 ha with a potentially considerable loss of crop. Plans to deploy a DLCO-EA aircraft for an aerial spray were under way at the time this bulletin was compiled (DLCO-EA, IRLCO-CSA).

Forecast: QSP is expected to continue posing a threat to maturing small grain cereals in Kenya and Tanzania, Uganda and elsewhere during the forecast period (DLCO-EA, 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: Rodent outbreaks were reported in maize, what, beans and peas in northern Tanzania in Arumeru district in Arusha region and Siha and Mwanga districts in Kilimanjaro region during June. The pest was reported attacking crops on more than 1,326 ha affecting 946 farmers. Control was launched by affected farmers with the support of MoA/PPD.



Rodent damage to maize cobs, Tanzania (MoA/PHS 6/2020).

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 disease this pest 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 sponsoring 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 as well as pasture and causes serious damage to 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, that continued benefiting participating countries across the globe was halted due to lack of resources to maintain the

system. FAO has agreed to search for resources and revive the PSMS 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 June, inventory of SGR pesticide stocks significantly changed in all regions except in WOR. During this month, close to 321,000 ha were treated (Afghanistan = 2,645; Algeria = 86 ha; Ethiopia = 75,219; India = 72,109; Iran = 67,689, Kenya = 30,830; Oman = 129; Pakistan = 47,198, Saudi Arabia = 5,360; Somalia = 19,029; UAR = 198; Yemen = 343 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	527~
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 = *Green Muscle*TM (fungal-based biological pesticide, e.g., NOVACRID)

LIST OF ACRONYMS

AAW	African armyworm (<i>Spodoptera expempta</i>)	DLCO-EA	Desert Locust Control Organization for Eastern Africa
AELGA	Assistance for Emergency Locust Grasshopper Abatement	DLMCC	Desert Locust Monitoring and Control Center, Yemen
AFCS	Armyworm Forecasting and Control Services, Tanzania	DMA	<i>Dociostaurus maroccanus</i> (Moroccan Locust)
AfDB	African Development Bank	DPPQS	Department of Plant Protection and Quarantine Services, India
AGRA	Agricultural Green Revolution in Africa	DPV	Département Protection des Végétaux (Department of Plant Protection)
AME	<i>Anacridium melanorhodon</i> (Tree Locust)	ELO	EMPRES Liaison Officers –
APLC	Australian Plague Locust Commission	EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases
APLC	Australian Plague Locust Commission Bands groups of hoppers marching pretty much in the same direction	EOR	Eastern SGR Outbreak Region
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa	ETOP	Emergency Transboundary Outbreak Pest
CABI	Center for Agriculture and Biosciences International	Fledgling	immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully developed reproductive organs to breed
CAC	Central Asia and the Caucasus	GM	GreenMuscle® (a fungal-based biopesticide)
CBAMFEW	Community-based armyworm monitoring, forecasting and early warning	ha	hectare (= 10,000 sq. meters, about 2.471 acres)
CERF	Central Emergency Response Fund	ICAPC	IGAD's Climate Prediction and Application Center
CIT	<i>Calliptamus italicus</i> (Italian Locust)	IGAD	Intergovernmental Authority on Development (Horn of Africa)
CLCPRO	Commission de Lutte Contre le Criquet Pélerin dans la Région Occidentale (Commission for the Desert Locust Control in the Western Region)	IRIN	Integrated Regional Information Networks
CNLA(A)	Centre National de Lutte Antiacridienne (National Locust Control Center)	IRLCO-CSA	International Red Locust Control Organization for Central and Southern Africa
COR	Central SGR Outbreak Region	ITCZ	Inter-Tropical Convergence Zone
CPD	Crop Protection Division	ITF	Inter-Tropical Convergence Front = ITCZ)
CRC	Commission for Controlling Desert Locust in the Central Region	FAO-DLIS	Food and Agriculture Organizations' Desert Locust Information Service
CTE	<i>Chortoicetes terminifera</i> (Australian plague locust)	Hoppers	young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)
DDLC	Department of Desert Locust Control	JTWC	Joint Typhoon Warning Center

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
LMM	<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 <i>Quelea</i> bird)		
SARCOF	Southern Africa Region Climate Outlook Forum		
SCA	<i>Schistocerca cancellata</i> (South American Locust)		
SFR	<i>Spodoptera frugiperda</i> (SFR) (Fall armyworm (FAW))		
SGR	<i>Schistoseca gregaria</i> (the Desert Locust)		

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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/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/>

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/>

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/5rxlpXEK5q8>

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

AAW

<http://www.armyworm.org/latest-armyworm-forecast-irlco-csa-oct-2018/>