

**Emergency Transboundary Outbreak Pests (ETOPs) Situation for
September with a forecast through mid-November 2019**
résumé en français est inclus

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹): During September, SGR continued developing in **Yemen, Ethiopia, Eritrea** and **Sudan, Somalia** and **Saudi Arabia** in the central outbreak region (COR) where more than 9,130 ha were treated. Breeding and hatching continued in **India** and **Pakistan** in the eastern outbreak region (EOR) and control operations treated close to 115,000 ha during this month. The situation remained relatively calm in the western outbreak region (WOR) and only small-scale breeding was reported in **Chad**.

Forecast: SGR will continue further developing in COR and EOR and may slightly increase in WOR. Intensive surveillance and timely control interventions remain crucial to abate any threats the pest poses to vulnerable communities

Red (Nomadic) Locust (*Nomadacris septemfasciata*) (**NSE**): NSE swarms persisted in Kafue Flats, **Zambia**, Ikuu-Katavi plains and Malagarasi Basin in **Tanzania** and Dimba plains in **Mozambique**. Active monitoring, surveillance and preventive interventions remain critical to abate the threats the pest poses to vulnerable communities.

Tree Locusts, *Anacridium spp.* (**ASP**): ASP outbreak was reported from Turkana country in **Kenya** and preparations were underway at the time this bulletin was compiled.

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

South American Locust, *Schistocerca cancellata* (**SCA**): No update was received during this month.

Italian (CIT), Moroccan (DMA), and the Asian Migratory Locusts (LMI): Locust activities have ended in most of the CAC, and only limited egg laying may have continued through September which is expected to end in the coming weeks. Fewer hectares were treated in 2019 compared to 2018, which could be attributed to good surveillance, monitoring and information sharing and timely interventions.

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

Fall Armyworm (*Spodoptera frugiperda*) (**FAW**): FAW was reported in maize and other crops in Africa and Asia during September (for more information, refer to pages 9-11).

African Armyworm (AAW) (*Spodoptera exempta*): No AAW outbreak was reported during this month.

Quelea spp. (QSP): QSP bird outbreaks were reported in wheat fields in **Zimbabwe** and control operations were conducted with MinAgri support.

Active surveillance and monitoring as well as sharing ETOP information and timely preventive interventions 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 septembre, SGR a poursuivi son développement au Yémen, en Éthiopie, en Érythrée, au Soudan, en Somalie et en Arabie Saoudite dans la région de la flambée épidémique (COR), où plus de 9 130 ha ont été traités. La reproduction et l'éclosion se sont poursuivies en Inde et au Pakistan dans la région est de la flambée épidémique et les opérations de lutte ont traité près de 115 000 ha au cours de ce mois. La situation est restée relativement calme dans la région de la flambée occidentale (WOR) et seule une reproduction à petite échelle a été signalée au Tchad.

Prévisions: SGR poursuivra son développement en COR et EOR et pourrait augmenter légèrement en WOR. Une surveillance intensive et des mesures de contrôle en temps opportun restent essentielles pour réduire les menaces que l'insecte nuisible fait peser sur les communautés vulnérables.

Criquet nomade rouge (*Nomadacris septemfasciata*) (**NSE**): Des essaims de NSE ont persisté dans les plaines de Kafue en Zambie, dans les plaines d'Ikuu-Katavi et dans le bassin de Malagarasi en Tanzanie et dans les plaines de Dimba au Mozambique. La surveillance active, la surveillance et les interventions préventives demeurent essentielles pour réduire les menaces que l'insecte nuisible fait peser sur les communautés vulnérables.

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

Le criquet arborial, *Anacridium spp*: Une épidémie d'ASP a été signalée dans le pays Turkana au Kenya et les préparatifs étaient en cours au moment de la rédaction du présent bulletin.

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

***Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI)*:** Les activités acridiennes ont pris fin dans la plupart des CCC, et seule une ponte d'oeufs limitée pourrait avoir continué jusqu'en septembre, ce qui devrait se terminer dans les prochaines semaines. Moins d'hectares ont été traités en 2019 par rapport à 2018, ce qui peut être attribué à une surveillance, à un suivi et à un partage d'informations efficaces et à des interventions rapides.

Chenille Légionnaire d'automne (*Spodoptera frugiperda*) (FAW): Des FAW ont été signalées dans le maïs et d'autres cultures en Afrique et en Asie en septembre (pour plus d'informations, voir pages 9-11).

Chenille Légionnaire africaine (AAW), *Spodoptera exempta*: aucun foyer d'AAW n'a été signalé au cours de ce mois.

***Quelea spp. oiseaux (QSP)*:** QSP des épidémies d'oiseaux ont été signalées dans des champs de blé au Zimbabwe et des opérations de lutte ont été menées avec le soutien de MinAgri.

La surveillance active et le suivi, ainsi que le partage des informations ETOP et des interventions préventives opportunes restent essentiels pour atténuer les menaces que représentent les ETOP pour la sécurité alimentaire et les moyens de subsistance des communautés vulnérables.

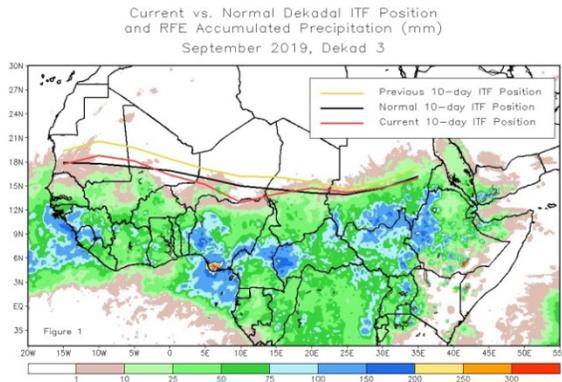
USAID / OFDA / PSPM surveille régulièrement les ETOP en étroite collaboration avec son réseau de PPD / DPV nationaux, d'entités régionales et internationales de surveillance et / ou de lutte antiparasitaire, y compris la FAO, la CLCPRO, le CRC, le DLCO-EA et l'IRLCO-CSA, et des centres de recherche, universités, secteur privé, ONG et autres et publie des bulletins analytiques concis à l'intention des parties prenantes. Fin de résumé

Note: This and all previous ETOP Bulletins and SITREPs can be accessed and downloaded on USAID Pest and Pesticide Monitoring website: [USAID Pest and Pesticide Monitoring](#)

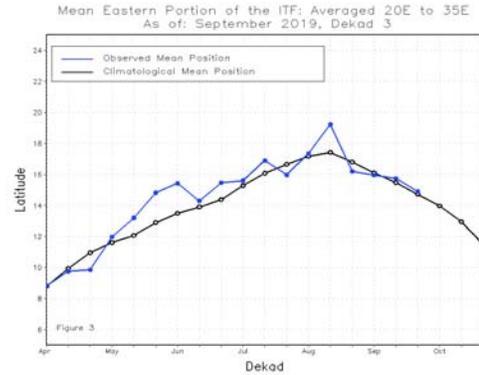
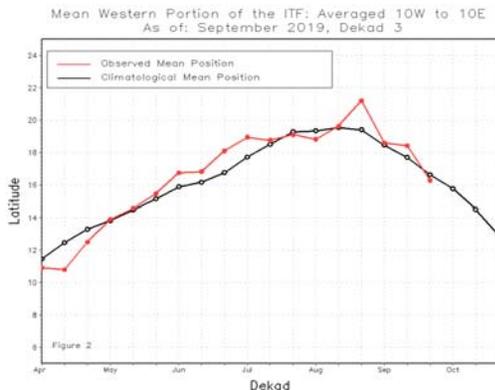
Weather and Ecological Conditions

During September, rainfall was above-average over local areas in Senegal, Mali, and western Burkina Faso, southern

Chad, much of South Sudan, southern and eastern Sudan, many parts of Ethiopia, Eritrea, northern Tanzania, and parts of Somalia and Kenya. Below average rainfall was reported in parts of Mauritania, Senegal, eastern Burkina Faso, parts of Uganda and South Africa during September. During the 3rd dekad of the month, the ITF location was steadily moving south along with the seasonal monsoon.



The above figure shows the 3rd dekad position (red) of the ITF relative to the long-term average position (black) during this dekad and its position during the 3rd dekad of August (yellow). The graphic illustrations below and the right column show latitudinal values of the western and eastern portions of the ITF, respectively, and their seasonal evolutions since April, 2019 (NOAA September 2019).



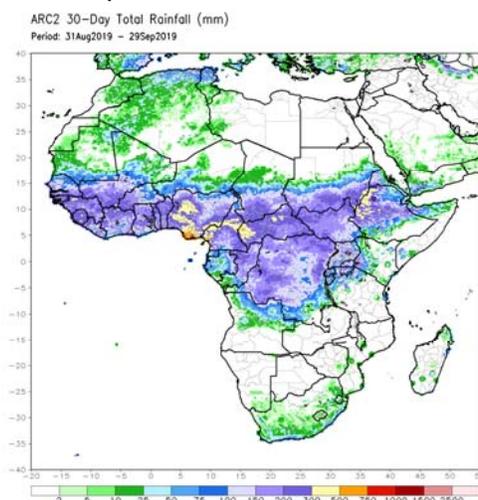
In **Algeria**, ecological conditions were favorable for locusts to develop in the periphery of agricultural areas and the extreme south of the country. In **Morocco**, ecological conditions were favorable only in areas that received rain in the Draa Valley and southeastern part of the country. In **Chad**, less rainfall occurred in grangerization zone in Ati and Abéché 2nd dekad of the month, but vegetation coverage was mostly green in areas that were surveyed during the 2nd dekad of September (CNLA/Mali, CNLAA/Morocco, CNLA/Tunisia, INPV/Algeria).

In **COR**: In Yemen, heavy rain and flooding associated with Cyclone Hikaa fell in the interior in Marib, Shabwah, and Hadhramuot and on the Red Sea and Gulf of Aden coastal plains during the last five days of September. In those areas, vegetation is green, soil is wet and ecological conditions will remain favorable for locusts to breed in Yemen during the forecast period. In Tehama coastal areas, drying to dry vegetation and dry soil were observed. In Oman, heavy rain from Cyclone Hikka fell on 24 September and flooding occurred in Al Waste governorate (DLMCC/Yemen).

Forecast for 1-14, October, 2019

During the 1st week of October, there is an increased chance for below-average rainfall over much of Senegal, and southwestern Mali. In contrast, there is

an increased chance for above-average rainfall over many places in portions of Sudan and Ethiopia. During the 2nd week of October, there is an increased chance for above-average rainfall over southeastern Senegal, southern Mali, Burkina Faso; an increased chance for above-average rainfall over southern Ethiopia and northern Somalia (NOAA 9/2019).



In **EOR**, above average rainfall continued well into the 1st two dekads of September in summer breeding areas on both sides of the Indo-Pakistan borders and ecological conditions remained favorable. Light to moderate rainfall was reported in spring breeding areas in southwest Pakistan and southeast Iran during the 3rd dekad of September (FAO-DLIS).

NSE Outbreak Regions: Dry and hot weather prevailed in most of the NSE outbreak areas where vegetation continued to dry out and extensive burning was in progress. Floods significantly receded in Buzi-Gorongosa plains in Mozambique, but most of Lake Chiuta plains were still under water during September (IRLCO-CSA).

CAC Region

In the CAC region, hot and dry weather prevailed throughout the region with

natural vegetation drying out in most of the locust breeding areas (FAO-ECLO).

Note: Changes in the weather pattern such as increased or decreased temperature and precipitation can contribute to ecological shift in ETOP habitats and could increase or decrease the risk of pest outbreaks, resurgence and emergence of new pests. For example, in Uzbekistan, Moroccan locust (DMA) which is normally a low to medium altitude pest has shown a considerable vertical habitat expansion by up to 1,000 feet or 300 meters from its regular ambient altitude due to warmer higher elevations.

The **Asian migratory locust**, an insect that normally has one generation per year, has begun breeding twice per year. These anomalies which are largely attributed to the change in the weather patterns and associated ecological shift can become serious concerns to farmers, rangeland managers, crop protection experts, development and humanitarian partners, etc. Regular monitoring, documenting and reporting anomalies in pest behavior and on habitat shifts are crucial to help avoid/minimize potential damage to crops, pasture and reduce negative impacts on food security and livelihoods of vulnerable populations and communities.

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 – WOR: SGR situation remained relatively calm in WOR and only small-scale breeding occurred south of Adré, Fada and Kalait in **Chad** where solitary and 2nd-5th instar hoppers were observed and immature, maturing and mature

solitary adults were detected between Bahai and Kalait as well as between Kalait and Fada during September. In **Algeria**, a few mature adults and 1st - 4th instar hoppers were detected near irrigated fields in summer breeding areas in Adrar and isolated immature and mature adults were detected in Hoggar, Illizi, Djanet and in the extreme south. In **Mauritania** a few isolated adults were observed in the south and southeastern parts of the country. In **Mali**, conditions are favorable in Adrar des Iforas, etc., but surveys could not be conducted or information from voluntary locust brigades could not be verified due to ongoing security problem.. In **Niger** copulating mature adults were observed and isolated mature adults were detected in a few places in Tamesna Plains near Abangharit. No locusts were reported in Morocco or Tunisia and no update was received in Libya during September (ANLA/Chad, CNLA/Mauritania, CNLAA/Morocco, CNLA/Tunisia, CNLAP/Mali, FAO-DLIS, INPV/Algeria).

Forecast: In **Algeria** small-scale breeding is likely in Hoggar and the southern areas where ecological conditions are favorable and a similar situation may occur in **Mali** where ecological conditions are favorable and autochthonous adult locusts exist. In **Niger**, small-scale breeding will continue and slightly increase locust numbers in Tamesna Plains. In **Mauritania** small-scale breeding will increase locust numbers slightly in summer breeding areas in the south and southeast during the forecast period. In **Chad**, breeding may continue and hatching may occur through October and increase locust numbers provided more rains are received during the coming weeks (ANLA/Chad, CNLAP/Mali, CNLA/Mauritania, CNLAA/Morocco, CNLA/Tunisia, FAO-DLIS, INPV/Algeria).

SGR – COR: SGR continued developing in Yemen, Ethiopia, Sudan, Somalia, Eritrea, and Saudi Arabia during September. In **Ethiopia**, breeding and hopper formations continued in Afar, Somali and Oromia regions in the northeastern and eastern parts of the country and hatching are expected to have begun in northeastern Amhara and southern Tigray bordering Afar. Scattered adults were detected along the railway line between Dire Dawa and Djibouti during September. More than 4,636 ha were treated against hoppers and swarms in northeastern Amhara, Afar (Tellak, Adaar, Chifra, Mile, Ewa, and Awura districts), in Erer Gota and Shinile districts in Somali regions and in Dire Dawa during early September. Material and financial assistance was provided by MinAgri and DLCO-EA spray aircraft was utilized for aerial spray and survey. Joint cross-region surveys were to be implemented (PPD/Ethiopia).



FAO-DLIS, September, 2019 (green = calm/no threat to crops; yellow = caution/potential threat to crops, orange = threat to crops, red = significant threat to crops)

Somalia: Swarms that arrived from Yemen began breeding in northeastern part groups of adult locust persisted on the northern highland and some were to migrate to eastern **Ethiopia**. Surveys were conducted in the northern coastal and sub-coastal areas where low to medium density isolated and scattered mature adults were observed during September. Unconfirmed reports from local communities indicated the presence

of mature adults near cropping areas in Awdal region and Xalimaale, Garba Dadar, Beeyo Kuul, Sheed Dheer and coastal plains in Lughaye district. Mature swarms and adults were also reported invading cropping areas in Saaxil region, but not yet confirmed. FAO is providing two vehicle mounted sprayers and biopesticides for locust control in northern Somalia (FAO-DLIS, PPD/Somalia)

In **Sudan**, low density solitary mature, immature adults were detected in Khartoum, Northern, River Nile, Kassala states and groups of adult locusts were observed in north Kordofan during the 3rd dekad of September and control is in progress against adult groups. Swarms from **Saudi Arabia** that reached coastal areas and the interior of the country began breeding on small-scale; hatching and hopper formations were to begin appearing by the end of the month. Swarms that arrived from **Saudi Arabia** began breeding on the coastal areas in **Eritrea** along the Red Sea coast where ecological conditions are favorable and 53 ha were treated early September. Small-scale breeding is in progress in the western lowland where heavy rains created favorable conditions.

In **Yemen**, survey operations were carried out in winter breeding areas on the Red Sea coastal plains and summer breeding areas in Marib and Al Jawf during September. Hopper and band formations were observed in the northern Teham coastal plains and 5th instar hopper bands were reported between Marib and Bayhan in the interior of the country and 245 ha were treated against 5th instar hoppers and fledglings in South W. Hadhramout during the 2nd dekad of September. Additional control operations were scheduled for the northern part of Tehama for the 1st dekad in October. Survey and control operations were

supported by the FAO/Sana'a office. In **Saudi Arabia**, hatching has occurred and hoppers and mature adults were observed in the southern Red Sea coastal plains near Jizan and immature and mature adults were reported further north along the coast. Ground control operations treated close to 4,195 ha during September. In **Oman**, the situation remained calm and only low density solitary immature adults were detected in several places in Musandam in the northern part of the country (DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Djibouti, PPD/Ethiopia, PPD/Somalia, PPD/Sudan).

Forecast: *SGR situation will continue developing and increase in COR.* With good rains and favorable ecological conditions in the forecast, small groups of adults from the interior of **Sudan** will likely move to the Red Sea plains and start breeding at the onset of the winter rains. Breeding will also continue on the Red Sea coastal plains in **Eritrea**, in Afar and along the railway areas in eastern **Ethiopia** and adjacent areas in northwestern highlands in **Somalia** and hatching, hopper formations and fledging will likely increase locust numbers. A few additional swarms from **Yemen** may also arrive in eastern **Ethiopia** and northwestern **Somalia** and breed where ecological conditions are favorable during the forecast.

In **Yemen**, breeding will continue in the Tehama and Gulf of Aden coastal plains; swarms may appear in the interior of the country and locust will persist in areas of recent rainfall. In **Saudi Arabia**, locust numbers will continue increasing on the southern coastal plains near Jizan and hoppers and adult groups could form and egg laying will start during late October to mid-November. In **Oman** small-scale breeding is likely in a few places in Al

Waste governorate where heavy rain from Cyclone Hikka fell on 24 September and flooding occurred created favorable conditions. The rest of COR will likely remain calm during the forecast period (DLMCC/Yemen, FAO-DLIS, FAO/Somalia, LLC/Oman, OFDA/PSPM, PPD/Djibouti, PPD/Ethiopia, PPD/Somalia, PPD/Sudan).

NOTE: *During the 2007 SGR outbreak, swarms that arrived from **Yemen** invaded **Ethiopia** and **Somalia** bred and rapidly spread to the southern, southwestern and western parts of **Ethiopia**, reached as far west as Kenos and Wellega. Some swarms also invaded northern **Kenya**. The outbreak caused damage to crops and pasture and required substantial amount of resources in response interventions. **END NOTE***

A few years ago, USAID sponsored rehabilitation of the Yemeni desert locust control center by refurbishing the offices and warehouses and replacing many of the equipment and materials that were damaged, destroyed or looted by the rebels. These materials and equipment, including vehicles, camping gears, communication tools were provided through multiple donations for locust surveillance, monitoring, and control. USAID also supported training technical staff in locust surveillance, monitoring and control as well as safe pesticide management.

SGR - EOR: Breeding continued over extended areas in Rajasthan **India** and ground control treated close to 84,640 ha during September. In **Pakistan**, breeding continued in Cholstan near India border, Islamghan and several other places and 30,210 ha were treated. Isolated immature and mature adults persisted in a few places in southern **Iran** near Iraq border during this month (FAO-DLIS).

Forecast: Breeding and hatching is expected to continue and form more locusts in summer breeding areas that received good rain on both sides of the **Indo-Pakistan** borders and locust will persist till vegetation dries out and then adults will begin moving west towards Baluchistan in western **Pakistan** and some may reach southeastern **Iran** during the forecast period (FAO-DLIS).

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

Red (Nomadic) Locust (NSE): NSE swarms persisted in Kafue Flats, **Zambia**, Ikuu-Katavi plains and Malagarasi Basin in **Tanzania** and Dimba plains in **Mozambique** and low density adult populations were expected to be present in Lake Chilwa/Lake Chiuta plains in **Malawi**, Wembere plains and Rukwa Valley in **Tanzania** and Buzi-Gorongosa plains in **Mozambique** during September (IRLCO-CSA).

Forecast: NSE populations will continue further concentrating and forming larger and denser swarms as vegetation burning reduces green areas and breeding begins at the onset of the seasonal rains in November/December. Some swarms may escape from the Kafue Flats in Zambia, Ikuu-Katavi plains and Malagarasi Basin in Tanzania and Dimba plains in Mozambique before the onset of the seasonal rains and start breeding. IRLCO-CSA is working with MinAgris and appealing to its member-states to avail resources to conduct surveillance and monitoring and launch preventive control ahead of the seasonal breeding that will

commence at the onset of the rains (IRLCO-CSA).

Central American Locust -

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

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

***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): DMA activities had ended earlier than usual due to hot dry weather and no activities were observed during September. A late received update indicated that CTI and LMI continued mating and egg-laying during August and this may have continued through September. Control operations treated 20,000 ha in Russia Federation in August; 1.8 million ha were treated in 2019 in all 10 combined - half the total treated in 2018 (FAO-ECLO, OFDA/PSPM).

Forecast: All locust activities are expected to end by mid-October and remain so till next spring (FAO-ECLO, OFDA/PSPM).

Fall armyworm (FAW) (*S. frugiperda*)

FAW infestations were reported in Amhara, Benisngul, Oromia, SNNPR and Tigray regions and Dire Adwa in **Ethiopia** during September, chemical and traditional control operations were effected on 431,000 ha (93.6% of areas infested May through September 25). The pest was reported on more than 461,000

ha (>19.4%) of the 2,371,000 ha planed during 2019 cropping season. In **Tanzania**, maize is in full maturity in northern part of the country and harvesting is in progress. Only embedded mature FAW larvae were detected in harvested cobs in Arusha and Moshi. Limited infestations were reported in irrigated rice field in Arusha (PHS/Tanzania).

FAW infestations were also reported in **Japan** where the pest was attacking silage and sweet corn and other crops 13 prefectures as of the 1st week of September. In **Nepal**, FAW was reported in 15 districts in eastern, central, and mid-western parts of the country at the time this bulletin was compiled as of September. Updates were not received from other regions at the time this bulletin was compiled, however, it is likely that the pest has been causing damage to maize and other crops in several countries (IRLCO-CSA, OFDA/PSPM, PHS/Tanzania, PPD/Ethiopia, USDA).

Forecast: FAW will likely continue affecting rain-fed and/or irrigated maize and other crops across sub-Saharan Africa, Asia, and any newly invaded regions during the forecast period. Active monitoring, surveillance, reporting and preventive interventions remain critical to abate the damage (OFDA/PSPM).

Note: Seasonal movements of FAW coupled with trade and travel by land, water (sea) and air can significantly increase further spread of FAW across continents and will contribute to its establishment in suitable habitats and climatological conditions. With its voracious appetite and more than 100 species of plants to choose from, FAW is highly unlikely to ever go hungry and terminate its presence in maize and other

crop growing countries (Reuters, OFDA/PSPM). End note.

Activity updates: The USAID/OFDA sponsored community-based fall armyworm monitoring, surveillance and management project (CBFAMFEW) has been implemented in six countries in eastern Africa from 2017 through August, 2019. The project has trained close to 1,400 senior PPD staff, district officers, lead farmers, agricultural agents, lead farmers and village leaders and sensitized more than 10,000 farmers and villagers on FAW-360 across the all participating countries. Through the project, a network of forecasters and scouts were established across 300 villages in project countries.

CBFAMFEW project has produced a quality ToT in English language <http://www.fao.org/3/CA2924EN/ca2924en.pdf> and twenty eight (28) communication materials in poster and flyer formats in 9 languages, including, Amharic, English, French, Luganda, Kinyarwanda, Oromfa, Runyankore and Swahili and disseminated across eastern Africa and the Horn. Participating countries have expressed interest to further translate the flyers into additional local languages for wider distributions.

The project forged strong relationships and links among experts from participating countries and implementing partners. It has also garner commitments from participating countries to ensure sustainability of the achievements the initiative has gained and incorporate in the national plans with own budget and ministerial-level written commitments.

Note: *Several species of natural enemies of FAW have been identified in Ethiopia, Kenya, Tanzania, Madagascar, India, etc. and studies are being conducted on these*

natural enemies to better understand their efficacy, environmental impacts and safety, etc. Some are being tested alongside other agro-ecological tools,, e.g., push-pull technology, etc., in an effort to develop effective, affordable, accessible, adaptable and sustainable means of managing the pest

<http://www.informaticsjournals.com/index.php/jbc/article/viewFile/21707/17850>. **End note.**

Information resources

Highly hazardous pesticides cannot and must not be considered or used for FAW control!

USAID/BFS and OFDA co-funded IPM based FAW management guidance document is available in English and French and will soon be available in Portuguese language: https://www.usaid.gov/sites/default/files/documents/1867/Fall-Armyworm-IPM-Guide-for-Africa-Jan_30-2018.pdf

BFS and SAWBO (Scientific Animation Without Borders) developed a video clip on FAW: <https://sawbo-animations.org/video.php?video=//www.youtube.com/embed/5rxlpXEK5g8>

USAID Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP) contains a list of pesticides assessed as relatively safer for use against FAW: <https://ecd.usaid.gov/repository/pdf/50065.pdf>

CABI FAW Portal: identification guides: <https://www.cabi.org/ISC/fallarmyworm> Bt maize and the fall armyworm in Africa (Africa Center for Biodiversity, June 2018): <https://acbio.org.za/sites/default/files/documents/BT%20Maize%20Fall%20Army%20Worm%20report.pdf>

Invasive Species Compendium Datasheets, maps, images, abstracts and full text on invasive species of the world: <http://www.cabi.org/isc/datasheet/29810>

FAO interactive FAW Risk-Index heat map to help monitor potential risk of FAW infestation in countries where the pest has been reported <http://www.fao.org/emergencies/resources/maps/detail/en/c/1110178/>

NURU, a mobile phone application detects FAW eggs, larvae, pupae and damage on maize crops is developed by Penn State University in collaboration with UNFAO:
<http://www.fao.org/news/story/en/item/1141889/code/>

Dissemination of safer, affordable, acceptable IPM-based pest management and assessment tools remains critical in abating FAW infestations and to minimize crop damage.

African Armyworm (AAW): AAW was not reported during this month.

Forecast: AAW activities are not expected in southern Africa until sometime in November/December (OFDA/PSPM).

Note: OFDA/PSPM has developed printable and web-based interactive maps for AAW project sites in project countries and potential participating countries and it is considering a similar map for the CBFAMFEW project sites:

<http://usaid.maps.arcgis.com/apps/Viewer/index.html?appid=8ff7a2eefbee4783bfb36c3e784e29cb>.

<http://usaid.maps.arcgis.com/apps/Viewer/index.html?appid=9d2ab2f918284595819836d1f16a526f>
<http://www.fao.org/3/CA1089EN/ca1089en.pdf>

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

Strong quarantine services and vigilance, monitoring and surveillance remain essential to prevent invasive pests invading a new territory.

Quelea sp. (QSP): QSP bird outbreaks were reported attacking maturing wheat crop in Manicaland, and Mashonaland East and West in **Zimbabwe** during September and ground control was launched with material and technical assistance from MinAgri. In **Kenya**, surveillance is in progress in Kisumu and

Mweya counties where QSP outbreaks are threatening wheat crop (IRLCO-CSA).

Forecast: QSP bird presence will decline in the southern and eastern outbreak areas where the pest will start breeding. The pest will likely remain being problem in other areas where crops are still in season.

Facts: QSP birds can travel ~ 100 km/day in search of food. An adult *Quelea* bird can consume 3-5 grams of grain and destroy the same amount each day. A medium density *Quelea* 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 update was received on rodents during this month, but the pest is a constant threat to field and storage crops and vigilance and rapid response remain essential to protect crops and produce.

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 as needed. During cropping seasons, regular scouting is critical to avoid crop damage/losses. Invasion countries should remain alert. DLCO-EA, IRLCO-CSA, DLCCs, DLMCC, CNLAs, national DPVs and PPDs, ELOs are encouraged to continue sharing ETOP

information with stakeholders as often as possible. It is critical that lead farmers, field scouts, community forecasters and others remain vigilant and report ETOP detections to relevant authorities as quickly as immediately.

OFDA's Contributions to ETOP Abatement Interventions

USAID/OFDA/PSPM is sponsoring an operational research on soil amelioration to manage the Senegalese grasshopper (OSE) through Arizona State University. OSE is a notorious pest of cereal crops and pasture causing serious damage to small-scale farmers in its wide geographic coverage which extends from the Canneries, Cape Verde to nearly all sub-Saharan regions of Africa to India and neighboring countries across a wide swath. OSE occurs more frequently than several other grasshopper/locust species and is a constant threat to small-scale farmers.

USAID/OFDA/PSPM is interacting with interested parties to explore means and ways to expand innovative technologies to AAW, FAW and SGR affected countries to contribute to food security to benefit farmers and rural communities.

The online Pesticide Stock Management System (PSMS) that was developed by FAO with financial assistance from donors, including USAID/OFDA, continues benefiting participating countries across the globe. Thanks to the system, SGR frontline countries and others are effectively managing their strategic pesticide stocks and have been able to minimize/avoid accumulation of unusable and toxic obsolete pesticides and empty pesticide containers.

Note: A sustainable Pesticide Stewardship (SPS) can contribute to

strengthening a 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 borders and geographic regions. **End note.**

OFDA/PSPM discourages the use of highly hazardous pesticides and promotes an IPM approach to minimize risks associated with pesticide stockpiling, poisoning and pollution. A judiciously executed triangulation of surplus stocks from countries with large inventories to countries that can safely and effectively utilize and create a win-win situation worth considering

Inventories of Strategic Pesticide Stocks for SGR Control

Inventory of strategic SGR pesticides stocks slightly changed during September where close to 9,130 ha were treated in COR (Ethiopia = 4,636 ha, Eritrea, Saudi Arabia = 4,195 ha, Yemen = 245 ha). In EOR, more than 115,000 ha were treated (India = 84,640 ha and Pakistan, 30,210 ha) during this month.

Table 1. Inventory of Strategic SGR Pesticide Stocks in Frontline Countries

Country	Quantity (l/kg)*
Algeria	1,186,326~
Chad	34,100
Egypt	10,253 ULV, 45,825 I
Eritrea	527~
Ethiopia	14,607~
Libya	24,930~
Madagascar	206,000~ + 100,000 ^D
Mali	3,560

Mauritania	39,900
Morocco	3,412,374 ^D
Niger	75,750~
Oman	9,953~
Saudi Arabia	25,184~ (-46,821?)
Senegal	156,000~
Sudan	106,507
Tunisia	62,200 obsolete
Yemen	35,124 ^D + 180 kg GM~
* Includes different kinds of pesticide and formulations - ULV, EC and dust;	
~ data may not be the 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>GreenMuscle</i> TM (fungal-based biological pesticide)	

LIST OF ACRONYMS

AAW *African armyworm (Spodoptera expempta)*
 AELGA *Assistance for Emergency Locust Grasshopper Abatement*
 AFCS *Armyworm Forecasting and Control Services, Tanzania*
 AfDB *African Development Bank*
 AGRA *Agricultural Green Revolution in Africa*
 AME *Anacridium melanorhodon (Tree Locust)*
 APLC *Australian Plague Locust Commission*
 APLC *Australian Plague Locust Commission*

Bands groups of hoppers marching pretty much in the same direction
 ASARECA *Association for Strengthening Agricultural Research in Eastern and Central Africa*
 CABI *Center for Agriculture and Biosciences International*
 CAC *Central Asia and the Caucasus*
 CBAMFEW *Community-based armyworm monitoring, forecasting and early warning*
 CERF *Central Emergency Response Fund*
 CIT *Calliptamus italicus (Italian Locust)*
 CLCPRO *Commission de Lutte Contre le Criquet Pélerin dans la Région Occidentale (Commission for the Desert Locust Control in the Western Region)*
 CNLA(A) *Centre National de Lutte Antiacridienne (National Locust Control Center)*
 COR *Central SGR Outbreak Region*
 CPD *Crop Protection Division*
 CRC *Commission for Controlling Desert Locust in the Central Region*
 CTE *Chortoicetes terminifera (Australian plague locust)*
 DDLC *Department of Desert Locust Control*
 DLCO-EA *Desert Locust Control Organization for Eastern Africa*
 DLMCC *Desert Locust Monitoring and Control Center, Yemen*
 DMA *Dociostaurus maroccanus (Moroccan Locust)*
 DPPQS *Department of Plant Protection and Quarantine Services, India*
 DPV *Département Protection des Végétaux (Department of Plant Protection)*
 ELO *EMPRES Liaison Officers –*
 EMPRES *Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases*
 EOR *Eastern SGR Outbreak Region*

ETOP	Emergency Transboundary Outbreak Pest	NOAA (US)	National Oceanic and Aeronautic Administration
Fledgling	immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully developed reproductive organs to breed	NPS	National Park Services
GM	GreenMuscle® (a fungal-based biopesticide)	NSD	Republic of North Sudan
ha	hectare (= 10,000 sq. meters, about 2.471 acres)	NSE	Nomadacris septemfasciata (Red Locust)
ICAPC	IGAD's Climate Prediction and Application Center	OFDA	Office of U.S. Foreign Disaster Assistance
IGAD	Intergovernmental Authority on Development (Horn of Africa)	PBB	Pine Bark Beetle (<i>Dendroctonus</i> sp. – true weevils)
IRIN	Integrated Regional Information Networks	PHD	Plant Health Directorate
IRLCO-CSA	International Red Locust Control Organization for Central and Southern Africa	PHS	Plant Health Services, MoA Tanzania
ITCZ	Inter-Tropical Convergence Zone	PPD	Plant Protection Department
ITF	Inter-Tropical Convergence Front = ITCZ)	PPM	Pest and Pesticide Management
FAO-DLIS	Food and Agriculture Organizations' Desert Locust Information Service	PPSD	Plant Protection Services Division/Department
Hoppers	young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)	PRRSN	Pesticide Risk Reduction through Stewardship Network
JTWC	Joint Typhoon Warning Center	QSP	Quelea species (Red Billed Quelea bird)
Kg	Kilogram (~2.2 pound)	SARCOF	Southern Africa Region Climate Outlook Forum
L	Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)	SCA	<i>Schistocerca cancellata</i> (South American Locust)
LCC	Locust Control Center, Oman	SFR	<i>Spodoptera frugiperda</i> (SFR) (Fall armyworm (FAW))
LMC	<i>Locusta migratoriacapito</i> (Malagasy locust)	SGR	<i>Schistoseca gregaria</i> (the Desert Locust)
LMM	<i>Locusta migratoria migratorioides</i> (African Migratory Locust)	SPI	<i>Schistocerca piceifrons piceiferons</i> (Central American Locust)
LPA	<i>Locustana pardalina</i>	SSD	Republic of South Sudan
MoAFSC	Ministry of Agriculture, Food Security and Cooperatives	SPB	Southern Pine Beetle (<i>Dendroctonus frontalis</i>) – true weevils
MoAI	Ministry of Agriculture and Irrigation	SWAC	South West Asia DL Commission
MoARD	Ministry of Agriculture and Rural Development	PBB	Pine Bark Beetle
NALC	National Agency for Locust Control	PSPM	Preparedness, Strategic Planning and Mitigation (formerly known as Technical Assistance Group - TAG)
NCDLC	National Center for the Desert Locust Control, Libya	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 fairly 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*

<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>
<http://www.cpc.ncep.noaa.gov/products/international/itf/itcz.shtml>

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