

**Emergency Transboundary Outbreak Pests (ETOPs) Situation for June  
with a forecast through mid-August 2018**  
**résumé en français est inclus**

## SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**<sup>1</sup>) remained generally calm in the western (WOR), central (COR) and eastern (EOR) outbreak regions in June. Only limited local breeding occurred near irrigated areas in central Algeria where control operations treated 581 ha during June. Isolated adults were detected in Cholistan, Pakistan.

**Forecast:** SGR situation will remain generally calm and only limited breeding is likely in areas of recent rainfall in southern Algeria, northern Sahel from Mauritania to Eritrea. Small-scale breeding is also likely in areas where heavy rains from cyclones Sagar and Mekunu fell over southern Yemen and Oman, eastern Saudi Arabia, northern Somalia and eastern Ethiopia during May.

**Red (Nomadic) Locust** (*Nomadacris septemfasciata*) (**NSE**): NSE continued to concentrate and form groups in Malawi, Mozambique, Tanzania and Zambia during June. As vegetation burning intensifies, the pest will further concentrate, form swarms and pose a threat to cropping areas in adjacent areas.

**Central American Locust, *Schistocerca piceifrons piceiferons* (CAL/SPI):** Low to medium density populations of CAL/SPI were detected in the Yucatan Peninsula in México and León in Nicaragua during May and control operations were launched using a biopesticide and chemical pesticides. Late instar hoppers and immature adults are expected to have continued developing during June and will likely progress through the forecast period. CAL/SPI, a close relative of the SGR, is native to Central America and tropical South America.

**South American Locust, *Schistocerca cancellata* (SCA):** SCA remained generally calm in Argentina, Bolivia and Paraguay during June. Regular surveillance and monitoring are conducted by the national pest management entities, including SENASA (Argentina), SENASAG (Bolivia) and SENAVER (Paraguay) as part of a regional pest management strategy for the South American locust.

<sup>1</sup> Definitions of all acronyms can be found at the end of the report.

**Italian (CIT), Moroccan (DMA), and the Asian Migratory Locusts (LMI):**

DMA is expected to have continued hatching in Central Asia and parts of the Caucasus. DMA and CIT will further develop during the forecast period and hence, *active surveillance and timely preventive interventions remain essential.*

**Fall Armyworm (*Spodoptera frugiperda*) (FAW):** FAW continued being a problem to maize and other cereal crops in eastern, central and, to a lesser extent, in parts of southern Africa during June (refer to pages 11-12 for additional information).

**African Armyworm (AAW) (*Spodoptera exempta*):** AAW outbreak was not reported during June, however the pest will likely appear in Eastern Africa and the Horn region during the forecast period.

**Southern Armyworm (*Spodoptera eridania*) (SAW),** a pest native to the Americas and common in southern USA to Argentina poses a serious threat to agriculture. So far, it has not been detected in Africa, however, it is suspected to be present in the southern and the central parts of the continent.

**Quelea birds (QQU):** QQU outbreaks were reported attacking small grain crops in several countries in **Kenya**, and it may be present in a few other places in the region during June.

*Active surveillance, monitoring, reporting and timely preventive interventions remain critical at all times to abate the threats ETOPs pose to crops and pasture.*

**USAID/OFDA/PSPM** monitors ETOPs regularly 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, as well as Agency partners, and NGOs and provides timely analytical bulletins and reports to stakeholders across the globe. **End summary**

## RÉSUMÉ

**La situation du Criquet pèlerin** (*Schistoseca gregaria* - SGR) est restée calme dans les régions ouest (WOR), centrale (COR) et orientale (EOR) en juin. Une reproduction locale limitée a eu lieu près des zones irriguées du centre de l'Algérie où les opérations de lutte ont traité 581 ha en juin. Des adultes isolés ont été détectés au Cholistan, au Pakistan.

**Prévoir: La situation du SGR** restera généralement calme et seule une reproduction limitée est probable dans les zones de pluies récentes dans le sud de

l'Algérie, au nord du Sahel, de la Mauritanie à l'Erythrée. Une reproduction à petite échelle est également probable dans les zones où de fortes pluies provenant des cyclones Sagar et Mekunu sont tombées sur le sud du Yémen et d'Oman, l'est de l'Arabie saoudite, le nord de la Somalie et l'est de l'Éthiopie en mai.

**Criquet nomade/rouge (Nomadacris septemfasciata) (NSE):** Les NSE ont continué à se concentrer et à former des groupes Malawi, au Mozambique, en Tanzanie et en Zambie en juin. À mesure que la végétation s'intensifie, le ravageur se concentre davantage, forme des essaims et menace les zones de culture dans les zones adjacentes.

**Criquet Amérique centrale, Schistocerca piceifrons piceiferons (CAL):** CAL / SPI): de faible à moyenne densité ont été détectées dans la péninsule du Yucatan au Mexique et à León au Nicaragua en mai et des opérations de lutte ont été lancées en utilisant un biopesticide et des pesticides chimiques. On s'attend à ce que les larves de stade avancé et les ailés immatures aient continué à se développer en juin et progresseront vraisemblablement tout au long de la période de prévision. CAL / SPI, un proche parent du SGR, est originaire d'Amérique centrale et d'Amérique du Sud tropicale.

**Criquet d'Amérique du Sud, Schistocerca cancellata (SCA):** Le SCA est resté généralement calme en Argentine, en Bolivie et au Paraguay en juin. Des activités de surveillance et de surveillance régulières sont menées par les organismes nationaux de lutte antiparasitaire, notamment SENASA (Argentine), SENASAG (Bolivie) et SENAVE (Paraguay) dans le cadre d'une stratégie régionale de lutte antiparasitaire pour le criquet d'Amérique du Sud.

**Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI):** et les criquets migrateurs asiatiques (LMI): le DMA devrait continuer à éclore en Asie centrale et dans certaines parties du Caucase. La DMA et la CIT se développeront davantage au cours de la période de prévision et par conséquent, une surveillance active et des interventions préventives opportunes restent essentielles.

**Chenille Légionnaire d'automne (Spodoptera frugiperda) (FAW):** FAW a continué de poser un problème au maïs et aux autres cultures céréalières dans l'est, le centre et, dans une moindre mesure, dans certaines parties de l'Afrique australe en juin (voir pages 11-12).

**Chenille Légionnaire africaine (AAW) (Spodoptera exempta):** L'épidémie d'AAW n'a pas été signalée en juin, mais l'organisme nuisible apparaîtra

probablement en Afrique de l'Est et dans la région de Horn durant la période de prévision.

**La chenille légionnaire du Sud (*Spodoptera eridania*) (SAW)**, un ravageur originaire des Amériques et commun dans le sud des États-Unis à l'Argentine, constitue une menace sérieuse pour l'agriculture. Jusqu'à présent, il n'a pas été détecté en Afrique, cependant, il est soupçonné d'être présent dans le sud et le centre du continent.

**Quelea birds (QQU):** Des éclosions de QQU ont été signalées en attaquant de petites cultures céréalières dans plusieurs pays du Kenya, et elles pourraient être présentes dans quelques autres endroits de la région en juin.

La surveillance active, la surveillance, les rapports et les interventions préventives opportunes restent critiques à tout moment pour réduire les menaces que les ETOP font peser sur les cultures et les pâturages.

**L'USAID / OFDA / PSPM** surveille régulièrement les ETOP en étroite collaboration avec son réseau de PPV / DPV nationaux, d'organismes de contrôle et / ou de lutte antiparasitaire régionaux et internationaux, y compris la FAO, la CLCPRO, CRC, DLCO-EA et IRLCO-CSA, ainsi que des partenaires de l'Agence et des ONG. et fournit des bulletins analytiques et des rapports opportuns aux parties prenantes à travers le monde. **Résumé de fin**

### **OFDA's Contributions to ETOP Abatement Interventions**

**USAID/OFDA** co-sponsored FAW disaster risk reduction project is being implemented by a consortium composed of the Center for Agriculture and Biosciences International (CABI), the Desert Locust Control Organization for Eastern Africa (DLCO-EA), International Center for Insect Physiology and Ecology (ICIPE) and National MinAgri and other partners and led by FAOSFE. The project has conducted national level ToTs and trained several dozen officers/staff in Tanzania, Ethiopia, Kenya and Rwanda, Uganda and Burundi and launched district level meetings for stakeholders involving more than 600 villages in 300 villages in

30 districts. The OFDA-BFS co-funded FAW Field manual:  
[https://feedthefuture.gov/sites/FallArmyworm\\_IPM\\_Guide\\_forAfrica.pdf](https://feedthefuture.gov/sites/FallArmyworm_IPM_Guide_forAfrica.pdf) and FAO's FAW IPM Manual for FFS.

Pheromone traps have been issued to all participating countries and mobile phones have been distributed to some countries and will be distributed to others in due course. The mobile apparatus will utilize the application that has been developed by FAO.

CABI (Nairobi) has drafted a field manual for community training on FAW. The Manual has been under review for design layout format and audience-specific content validation. It focuses on district

officers, extension staff and rural communities.

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

OFDA/PSPM's interests in sustainable pesticide risk reduction in low income countries to strengthen their capacities and help avoid potentially threatening pesticide related contaminations and improve safety of vulnerable populations and their shared environment remain high on the agenda.

The online Pesticide Stock Management System (PSMS) that was developed by the UN/FAO with financial assistance from USAID/OFDA and other partners continues benefiting participating countries across the globe. Thanks to this tool, ETOP-prone countries and others have been able to avoid unnecessary procurements and stockpiling of pesticides. This practice has significantly contributed to minimize and avoid costly disposal operations and improved safety and well-being of their citizens and the shared environment.

USAID/OFDA-sponsored FAO implemented DRR projects has been strengthening national and regional capacity for emergency locust control and prevention and helped tens of millions of farmers, pastoralists across Sahel West Africa, Northwest Africa, Eastern and Northeastern Africa, Caucasus and Central Asia (CAC), and the Middle East.

The projects created, enhanced, and facilitated collaborations among

neighboring countries for joint monitoring, surveillance, information sharing and technical support. The projects supported several dozen training on ETOP monitoring and control. Thanks to these and other similar efforts, potentially serious locust outbreaks and invasions had been abated several times in many countries across the primary outbreak regions for more than a decade

The **USAID/OFDA-FAO-DLCO-EA** sponsored Horn of Africa emergency desert locust management project is progressing well. Technical and material supports that have been provided to participating frontline countries and DLCO-EA are strengthening the capacity to better monitor, report, prevent, and abate locusts in the sub-region.

**Note:** ETOP SITREPs can be accessed on USAID Pest and Pesticide Management website: <https://www.usaid.gov/what-we-do/working-crises-and-conflict/responding-times-crisis/how-we-do-it/humanitarian-sectors/agriculture-and-food-security/pest-and-pesticide-monitoring>

### Weather and Ecological Conditions

During most of June, below-average rainfall was reported over parts of Senegal, Gambia, Guinea-Bissau, local areas in southwestern Mali, central Liberia, eastern Burkina Faso, parts of Ghana, local areas in Benin, parts of Niger, Nigeria and Cameroon, Equatorial Guinea, Gabon, parts of Central African Republic, southern Congo-Brazzaville, many parts of Democratic Republic of Congo, and local areas in Uganda, South Sudan Republic and Ethiopia. In contrast, much of Guinea-Conakry, Sierra Leone, portions of Liberia and Mali, much of Cote

d'Ivoire, parts of Ghana, western Burkina Faso, southern Niger, parts of Togo and Benin, portions of Nigeria, central and southern Chad, local areas in Cameroon, northern Congo-Brazzaville, parts of Central African Republic, and parts of Democratic Republic of Congo above above-average rainfall (NOAA).

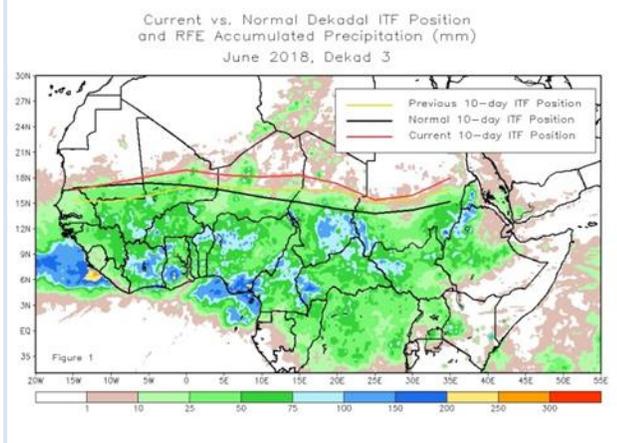


Figure 1. The current position of the ITF (red) relative to the mean climatological position during the 3<sup>rd</sup> dekad of June (black) and its position during the 2<sup>nd</sup> dekad of June (yellow) (NOAA).

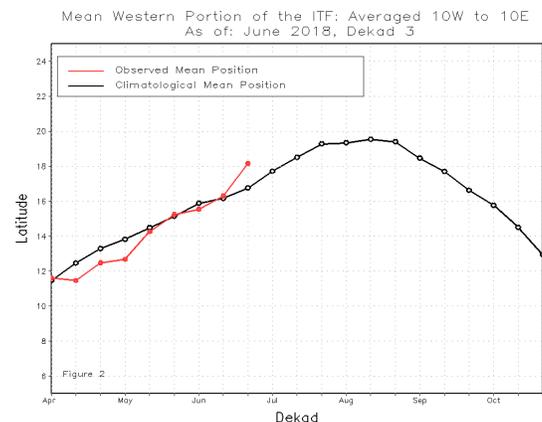
In the SGR **WOR** ecological conditions remained largely dry and unfavorable in June for locusts to survive and breed except in the surroundings of irrigated areas in Adrar in central Algeria and in Mali areas where light to moderate rains fell, the soil is moist and annual vegetation has begun appearing and perennial plants are developing in the SGR primary outbreak areas. Favorable conditions also exist in limited areas in the Ziz and Ghris Valley and southeastern Morocco (CNLA/Mali, CNLA/Mauritania, CNLAA/Morocco, CNLA/Tunisia, FAO-DLIS, INPV/Algeria, NLCC/Libya, NOAA).

During the 3<sup>rd</sup> dekad of June from 21-30 June, the Inter-Tropical Front (ITF) showed a significant northward migration in western Africa and towards the end of

the month, the Front exhibited a significant advancement in eastern Africa. During that time, the mean western (10W-10E) portion of the ITF was approximated at 18.2N, rising well above the climatological normal position by 1.6 degrees.

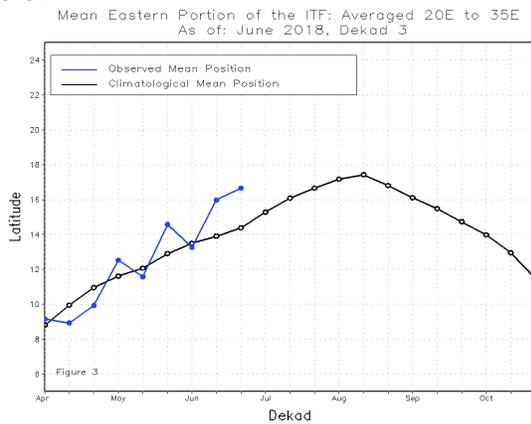
The mean eastern (20E - 35E) portion of the ITF was approximated at 16.6N, far above the climatological mean position (14.4N) by a remarkable 2.2 degrees. This latest eastern ITF portion anomaly is another significant jump northward from what was already a record position for mid-June going back to the start of the ITF record in 1989. The above map shows the current position of the ITF relative to the mean climatological (black) position during the 3rd dekad of June and its previous (yellow) position during the 2nd dekad of June (NOAA, June 2018).

Figure 2.



Figures 2 and 3 show time series (red), illustrating the mean latitudinal values of the western (Figure 2) and eastern (Figure 3) portions of the ITF and their seasonal evolution compared to climatology since April, 2018 (black) (NOAA).

Figure 3.



In **COR**, much of southern Sudan, parts of Uganda, western Kenya, and portions of Ethiopia received above-average rainfall during June. In contrast, light to moderate rainfall was reported in parts of Yemen and in summer breeding areas in Sudan, in local areas in Uganda, South Sudan Republic and Ethiopia during June. In Sudan, the summer breeding areas from Sinkat, Haya and Derudeb in the east up to El Geneina in the far west received during June. The ITCZ was located north of Kassala and El Geneina, south of Atbara and El Fashir by the end of June, a position above the climatological mean by approximately 2 degrees northwards (see Figure 1 above) (NOAA, PPD/Sudan).

**EOR:** Light to moderate rains fell in Rajasthan, India during the last part of June, but overall dry conditions persisted and ecological conditions remained unfavorable during the month (FAO-DLIS).

**Weather Forecast** - Precipitation outlook indicates that most parts of east Africa and southern parts of Sahel are expected to receive slightly above normal rainfall during the next 3 months. Most of Africa is expected to have above normal temperature, except parts of Sahel region

where the cooler than normal temperatures will persist (PSPM).

**NSE Outbreak Regions:** Dry and cool weather prevailed in most of the NSE outbreak areas except in Mozambique where light rains were received. Vegetation continued drying out in many places with the exception of areas that received towards the end of the rainy season (IRLCO-CSA, NOAA).

**Note:** *Combinations of precipitation, warm weather and green vegetation MUST be closely watched as this mix coupled with the seasonal wind trajectory can favor, breeding and facilitate migration and further spread of migratory pests. End note.*

**Note:** *Changes in the weather pattern and increased temperature can contribute to ecological shift in ETOP habitats and increase the risk of pest outbreaks, resurgence and emergence of new pests. 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 ambient altitude due to warmer higher elevations.*

*The **Asian migratory locust**, an insect that normally breeds once a year, has begun exhibiting two generations per year. These anomalies which are largely attributed to the change in the weather patterns and associated ecological shift are serious concerns to farmers, rangeland managers, crop protection experts, development and humanitarian partners, etc. Regular monitoring, documenting and reporting anomalous manifestations in pest behavior and on habitat shifts remain critical to help avoid/minimize potential damage to*

*crops, pasture and livestock and reduce subsequent negative impacts on food security and livelihoods of vulnerable populations and communities.*

[http://www.cpc.ncep.noaa.gov/products/international/casia/casia\\_hazard.pdf](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:** The **SGR** situation remained generally calm in **WOR**. In **Algeria** 3 ground survey and control teams were deployed to 3 wilayas (districts), i.e., Adrar, Tamanrasset and Illizi and detected different stages of hoppers as well as solitary immature adults. Mature adults were also breeding on small-scale near irrigated areas in Adra in central Algeria. Control operations treated 581 ha during this time. In Morocco, ecological conditions are only favorable in very small areas in the Ziz and Ghrib Valley and the southeast were favorable for SGR to survive, but overall the situation remained calm and no locusts were reported during this time.

In **Mali**, the national locust control center (CNLCP) developed a contingency strategy with a focus on the use of reliable and influential resource persons to guide and enable surveillance and monitoring without too much risk to its field staff. In light of this, CNLCP has surveillance and rapid response teams on standby at Gao intervention base as the ongoing insecurity situation in the northern part of the country continues undermining regular essential survey and monitoring operations. This part of the country is also the primary breeding areas for the SGR and need regular surveillance and monitoring. No surveys

were conducted and no locusts were reported in Chad, Libya, Mauritania, and Tunisia or other countries in **WOR** during June (CNLA/Mali, CNLA/Mauritania, CNLAA/Morocco, CNLA/Tunisia, FAO-DLIS, INPV/Algeria, NLCC/Libya).

**Forecast:** The SGR situation will likely remain calm in most areas in **WOR** and only a low numbers of adults from low reproduction and from control operations in spring breeding areas in north Africa will migrate south to northern Sahel and begin breeding on small-scale in southern Algeria, southern Morocco, Mauritania, Mali, Niger and Chad, but significant developments are not expected during the forecast period (CNLA/Mali, CNLA/Mauritania, CNLAA/Morocco, CNLA/Tunisia, FAO/DLIS, INPV/Algeria, NLCC/Libya).

**SGR (Desert Locust) - COR:** No locusts were detected during surveys in North and South Al Batinah, Musandam, Al Bureimi and Al Dakhlyia in **Oman**, only a few solitary adults were detected in southern coast of **Yemen**. Surveys were not conducted and locusts were not reported in Sudan, Djibouti, Ethiopia, Somalia, Eritrea, Egypt or Saudi Arabia during June (DLMCC/Yemen, FAO-DLIS, LCC/Oman).

**Forecast:** Limited breeding is likely in southern Yemen, the empty corner in the interior of Saudi Arabia, eastern coastal areas of Somalia, and southern Oman and eastern Ethiopia where heavy rains and floods from cyclones Sagar and [Mekunu](#) occurred in May. Small-scale breeding is also likely in areas that received rain in the interior of Sudan and western Eritrea, but significant developments are not likely during the

forecast period (DLMCC/Yemen, FAO-DLIS, FAO-DLIS, LCC/Oman).

**SGR - EOR:** The SGR situation remained calm in EOR during June and only isolated adults were detected in Cholistan, Pakistan near the Indian border (FAO-DLIS).

**Forecast:** *Small-scale breeding will occur in areas that received monsoon rains along the Indo-Pakistan borders, but significant developments are not expected.*

*Active monitoring, timely reporting and preventive interventions remain critical to abate any major developments that could pose serious threats to crops and pasture in areas where locust activities are present.*

The **USAID/OFDA-FAO-DLCO-EA** sponsored Horn of Africa emergency desert locust management project is in progressing. Technical and material supports that have been provided to participating frontline countries and/or DLCO-EA are strengthening the capacity to better monitor, report, prevent, and abate locusts in the sub-region.

### **Red (Nomadic) Locust (NSE):**

Extensive vegetation burning caused NSE to concentrate and form dense swarms in several places during June.

In, **Malawi** village locust monitoring groups reported the presence of dense NSE swarms in Lake Chilwa/Lake Chiuta plains during June. If left uncontrolled, the swarms will become a threat to agriculture in southern Malawi. The IRLCO-CSA and the Ministry of Agriculture are planning to launch a joint survey and control interventions to avert

swarm escapes in Lake Chilwa/Lake Chiuta plains. Surveys will also help determine the situation in Mpatsanjoka Dambo and Ndindi marshes. In **Mozambique**, low density populations were reported in Buzi-Gorongosa and Dimba plains and are expected to form dense concentrations as the dry season progresses. In **Zambia**, village locust monitoring groups reported the presence of significant populations of *Cataloipus sp.* grasshoppers in Kafue Flats. Vegetation was relatively green and only low number of locust concentration occurred in these areas. Aerial survey will be undertaken to determine the locust situation where extensive vegetation burning has taken place. In **Tanzania** swarm formations are expected to have occurred in Ikuu Katavi, Malagarasi Basin and North Rukwa due to drying up and burning of vegetation and further exacerbated by lack of rain (IRLCO-CSA).

**Forecast:** Hot and dry conditions coupled with extensive vegetation burning will cause NSE to continue forming groups and concentrations and swarms. This situation is likely to occur in Iku-Katavi, Malagarasi Basin, North Rukwa in Tanzania; Dimba plains in Mozambique and Kafue Flats in Zambia where significant populations have been present. If left uncontrolled, swarms which have already developed in Lake Chilwa/Lake Chiuta plains in Malawi will pose a threat to agriculture. At the time this bulletin was compiled, preparations were underway to conduct aerial survey and control operations in the outbreak areas in Malawi (IRLCO-CSA, OFDA/AELGA).

*Given the significance of the NSE to food security and livelihoods of vulnerable populations, IRLCO-CSA continues*

appealing to its member-states to avail resource for early detection and timely control in the pest's primary outbreak areas.

### **Schistocerca piceifrons piceifrons –**

Low to medium density populations of CAL/SPI were detected in the Yucatan Peninsula in México and León in Nicaragua during May and control operations were launched using *Metarhizium acridium* and fipronil. 2nd generation populations of late instar hoppers and immature adults will develop during the forecast period. CAL/SPI is native to the tropical Central and South America and belongs to the same genus as SGR.

**Forecast:** First generation hoppers will begin appearing in the Yucatan Peninsula in **Mexico** and in León, **Nicaragua** during the forecast period and continue developing in the region.



Adults (l) and hoppers ® of CAL/SPI, in Yucatan, Mexico (photo courtesy: Marion Poot, 2018)

**Note:** SPI is native to the Central and South America and belongs to the same genus as the Desert Locust. Present in Belize, México, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panamá, it is an important pest in the tropical regions of the Americas. The Pest is bi-voltine - has two generations per year. Outbreaks often occur in the

Yucatán Peninsula every 4 years, probably this year the locust may appear in higher density due to favorable ecological conditions. National entities routinely monitor the pest. The Federal and State Governments coordinate with farmers to abate increased population build ups. In addition, training and other supports are also provided through OIRSA – the Regional office of the International Organization for Animal and Plant Health (Mario Poot).

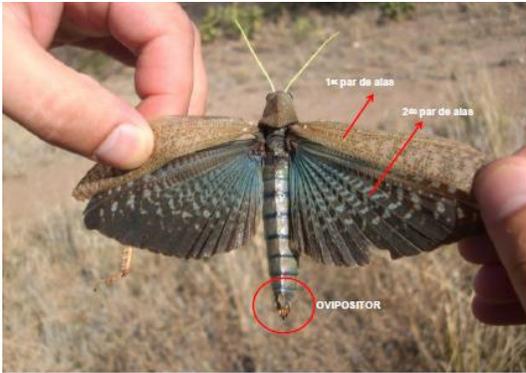
### **South American Locust, Schistocerca cancellata (SCA):**

SCA situation remained generally calm in Argentina, Bolivia and Paraguay during June. Surveillance and monitoring are regularly conducted by the national pest management entities, including SENASA (Argentina), SENASAG (Bolivia) and SENAVE (Paraguay) as part of a regional management plan for the South American locust (Medina, SENASA).

### **Tropidacris collaris (Tucura quebrachera –grasshopper-)**

large populations of high density adults and hoppers of the grasshopper species continued appearing in Santiago del Estero and Cordoba provinces in Argentina (see picture below from SENASA). The pest mostly causes damage to trees and shrubs. SENASA executed control operations along the highways and roads (Medina, SENASA).

SCA outbreaks are usually reported in Argentina, Bolivia, Paraguay during the summer/warmer seasons. Currently the SCA situation is relatively calm, however, due to a potentially warmer winter season it is likely that locust population will increase during the forecast period.



Tucura quebrachera (*T. collaris*). Fuente: Programa Nacional de Acridios, 2012.

**Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC):** No update was received from CAC at the time this bulletin was prepared, however, DMA is expected to have continued hatching and forming hoppers and groups primarily in Central Asia and parts of the Caucasus Azerbaijan and Georgia.

**Forecast:** DMA hoppers will continue appearing and maturing in several countries - Afghanistan, Azerbaijan, Georgia, Tajikistan, Turkmenistan and Uzbekistan during the forecast period. CIT will continue appearing in several countries during the forecast period.

**Tree locust: *Anacridium spp.*** Tree locust outbreak was reported in Masabit, Isiolo and Turkana counties in **Kenya** during June. Control operations were undertaken in Isiolo County and preparations to launch similar operations in the other affected countries were underway at the time this bulletin was compiled (IRLCO-CSA).

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

FAW continued being a threat to rain-fed and irrigated crops in eastern, central and parts of southern Africa. It may be also present in irrigated crops and will soon

start appearing in the rain-fed crops at the foothills of the seasonal rains in other regions.



A perfect biometrics image of FAW larva (File photo KSU)

In **Mozambique**, FAW was reported causing damage to irrigated maize in Dondo, Nhamatanda and Buzi districts in Sofala Province during June. Control operations were launched by the affected farmers with assistance from the MinAgri. In **Kenya**, survey is being conducted in severely affected areas to determine the extent of FAW damage. Farmer's training is in progress to effectively manage FAW. In **Ethiopia**, the pest was reported in hundreds of districts in seven administrative regions where thousands of ha of maize crops have been reported affected. No updates were received from **Tanzania, Uganda, South Sudan** and other countries in the region at the time this bulletin was compiled, but it is likely that FAW continued attacking maize and other crops (IRLCO-CSA, PPD/Ethiopia).

**Forecast:** FAW will continue being a threat to irrigated and rain-fed maize and other crops across several regions in Africa during the forecast period. The pest has become more common in countries with bimodal rainfall patterns and where continued irrigations allow uninterrupted presence of favorable host plants for the pest to survive and

continue breeding and cause damage to crops. In the southern Africa region, the situation may ease up as the cool to colder weather will slow down breeding of the pest, nevertheless, vigilance remains essential.

*Note: As of June 2018, FAW has been reported in all of sub-Saharan African countries, but Eritrea, Lesotho, Mauritius and Seychelles (FAO).*

*Active surveillance and timely reporting and interventions remain critical.*

*The need to develop safer and ecologically sustainable, economically sound and socially acceptable IPM based management interventions and assessment tools remain critical.*

FAOSFE is providing support to SSD and Somalia through country specific FAO Trust Fund projects and other means (Japan funded FAW project, etc.).  
<https://reliefweb.int/report/uganda/uganda-food-security-outlook-update-october-2017-january-2018>

### **Additional info sources on FAW**

*Armyworm Network: A web resource for armyworm in Africa and their biological control:*

<http://www.lancaster.ac.uk/armyworm/>

*Latest African and Fall Armyworm Forecast from IRLCO-CSA - 5th Jul 2017:*  
[http://www.lancaster.ac.uk/armyworm/forecasts/?article\\_id=002971](http://www.lancaster.ac.uk/armyworm/forecasts/?article_id=002971)

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

*Drought and armyworm threaten Africa's food security:*

<http://www.theeastafrican.co.ke/news/Drought-and-armyworm-threaten-Africa-food-security/2558-3996692-ggws8q/index.html>

<http://www.fao.org/food-chain-crisis/how-we-work/plant-protection/fallarmyworm/en/>  
<https://fallarmywormtech.challenges.org/>  
[http://www.fao.org/fileadmin/templates/cc/map/map\\_of\\_affected\\_areas/Fall\\_Arm\\_yworm\\_brief\\_-\\_15Dec2017\\_.pdf](http://www.fao.org/fileadmin/templates/cc/map/map_of_affected_areas/Fall_Arm_yworm_brief_-_15Dec2017_.pdf)

FAO Food Chain Crisis Early Warning Bulletin for January, 2018:

<http://www.fao.org/3/I8520EN/i8520en.PDF>

FAO FAWRisk-Map has been developed to provide information on the risk of household food insecurity associated with FAW attack across Africa (see below)

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

*USAID issued prize for mobile technology to detect and help monitoring of FAW has attracted 225 applicant of which some 20 will be shortlisted for collaborative operations*

(<https://feedthefuture.gov/lp/partnering-combat-fall-armyworm-africa>)

**African Armyworm (AAW):** AAW season had ended in the southern outbreak region and outbreaks were reported in the central region in May.

**Forecast:** AAW outbreak will likely become a threat to crops in the central northern outbreak areas in Tanzania and Kenya and perhaps southern Ethiopia. Trap operators are advised to actively monitor their traps. Trap monitoring must be accompanied by routine crop scouting to detect and report/act on egg, larval

and damage to help facilitate rapid interventions. Vigilance and timely and appropriate preventive interventions remain critical to avoid crop damage (IRLCO-CSA, OFDA/AELGA).

**Note:** PSPM continuous collecting, analyzing and reporting on AAW. USAID/OFDA has developed printable and web-based maps for AAW trap monitoring locations, for participating outbreak and invasion countries in the central region: <http://usaid.maps.arcgis.com/apps/View/index.html?appid=8ff7a2eefbee4783bfb36c3e784e29cb>. A similar map is also being developed for southern region: <http://usaid.maps.arcgis.com/apps/View/index.html?appid=9d2ab2f918284595819836d1f16a526f> (click on the links for the maps). OFDA/PSPM intends to develop a similar map for FAW DDR project).

**Southern Armyworm (*Spodoptera eridania*) (SAW/SER)** - native to the Americas and widely present from southern USA to Argentina, SAW is probably the most polyphagous species in the genus *Spodoptera*. It is known to feed on more than 200 host plants belonging to 58 families mostly broadleaf such as cabbage, carrot, cassava, collard, cotton, cowpea, eggplant, okra, pepper, potato, soybean, sweet potato, tomato, watermelon etc. (UF) (FAW's host range is 80-100 species in 27 families).



Mature SAW larva (caterpillar) (file photo UF)



Foliar (t) and fruit (b) damage caused by SAW (file photo UF)

SAW is also known cause damage to avocado, citrus, peanut, sunflower, tobacco and various flowers. Depending on the host plant and temperature, SAW can complete its life cycle within 30-40 days and is able to produce 1,500-3,000 eggs over its lifetime making it a prolific breeder and a highly polyphagous and a serious pest [http://entnemdept.ufl.edu/creatures/veg/leaf/southern\\_armyworm.htm](http://entnemdept.ufl.edu/creatures/veg/leaf/southern_armyworm.htm).

**Quelea (QQU):** QQU bird were reported attacking rice in Narok and Kisumu counties in Kenya during June. Aerial control operations are launched by the Plant Protection Service in collaboration with DLCO-EA (IRLCO-CSA, OFDA/AELGA).

**Forecast:** QQU outbreaks are likely to continue in **Kenya** and may also become a problem to irrigated wheat in **Zimbabwe** towards the end of the forecast period (IRLCO-CSA, OFDA/AELGA).

**Facts:** QQU birds can travel ~100 km/day in search of food. An adult QQU bird can consume 3-5 grams of small grain and destroy the same amount in a day. A medium density QQU 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 June, but the pest is a constant threat to field and storage crops.

**FACTS:** On average an adult rat can consume 3-5 gm of food (grains etc.)/day and a population of 200 rats/ha (a very low density) could consume what a sheep can eat in one day (not to mention the amount they can damage, destroy or pollute making it unfit for human consumption) and the zoonotic diseases they carry and transmit.

**All ETOP front-line countries** must maintain regular monitoring and surveillance. During crop in-seasons, scouting must be implemented on a regular basis. Invasion countries should remain on 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 and on a timely basis. Lead farmers and community forecasters must remain vigilant and report ETOP detections to relevant authorities immediately.

**Note:** A sustainable Pesticide Stewardship (SPS) can improve and strengthen 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** encourages the use of alternatives to hard core pesticides and at all times promotes IPM to minimize risks associated with pesticide stockpiling. A judiciously executed triangulation of surplus stocks from countries with large inventories to countries in need and where they can be effectively utilized is a win-win situation worth considering.

### Inventories of Pesticide Stocks for SGR Prevention and Control

Inventory of national strategic stocks of SGR pesticides was reduced by 581 l due to control operations in Algeria during June.

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

Country	Quantity (l/kg)*
Algeria	1,188,099~
Chad	38,300
Egypt	68,070~ (18,300 ULV, 49,770 l)
Eritrea	17,122~ + 20,000 <sup>D</sup>
Ethiopia	9,681~
Libya	25,000~
Madagascar	206,000~ + 100,000 <sup>D</sup>
Mali	5,000
Mauritania	14,998 <sup>DM</sup>
Morocco	3,490,732 <sup>D</sup>
Niger	75,750~
Oman	10,000~
S. Arabia	89,357~
Senegal	156,000~
Sudan	169,710~

Tunisia	68,514 obsolete
Yemen	40,090 <sup>D</sup> + 180 kg GM~
*Includes different kinds of pesticide and formulations - ULV, EC and dust;	
~ data may not be current;	
<sup>D</sup> = Morocco donated 100,000 l of pesticides to Madagascar and 10,000 l to Mauritania in 2015	
<sup>D</sup> = In 2013 Morocco donated 200,000 l to Madagascar	
<sup>D</sup> = Saudi donated 10,000 to Yemen and pledged 20,000 l to Eritrea	
<sup>DM</sup> = Morocco donated 30,000 l of pesticides to Mauritania	
GM = <i>GreenMuscle</i> <sup>TM</sup> (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*

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	QQU	Quelea Quelelea (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	Schistocerca cancellata (South American Locust)
LCC	Locust Control Center, Oman	SFR	Spodoptera frugiperda (SFR) (Fall armyworm (FAW))
LMC	Locusta migratoriacapito (Malagasy locust)	SGR	Schistoseca gregaria (the Desert Locust)
LMM	Locusta migratoria migratorioides (African Migratory Locust)	SPI	Schistocerca piceifrons piceiferons (Central American Locust)
LPA	Locustana pardalina	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
NOAA (US)	National Oceanic and Aeronautic Administration		

*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*

**Point of Contact:**

If you need more information or have any questions, comments or suggestions or know someone who would like to freely subscribe to this report or unsubscribe, please, reach out to:

Yeneneh Belayneh, PhD.

Senior Technical Advisor

USAID/DCHA/OFDA

[ybelayneh@usaid.gov](mailto:ybelayneh@usaid.gov)

Tel.: + 1-202-712-1859 (landline)

+ 1-703-362-5721 (mobile)

To learn more about our activities and programs, please, visit our website:

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