

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

## SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**<sup>1</sup>) situation remained serious in the central outbreak region (COR) along the Red Sea coasts of Sudan, Eritrea and Saudi Arabia and to some extent in Egypt, where control operations treated more than 82,000 hectares ha tens of thousands of ha during February. The western outbreak region (WOR) remained clam and only limited breeding was reported in Morocco and Mali during this month. In the eastern outbreak region (EOR) control operations treated adult groups and small swarms on a few thousand ha in the southern coast of Iran in February.

**Forecast:** As vegetation dries out along both side of the Red Sea coast, locusts will move to spring breeding areas in the Nile Valley in northern Sudan and the interior of Saudi Arabia and likely begin breeding in the coming months in COR. In WOR small-scale breeding will occur in Algeria, Morocco as and Mali during the forecast period, but significant developments are not expected. In EOR, hoppers and groups will form in southern Iran and small-scale breeding may occur in western Pakistan where moderate rainfall was reported during February.

**Red (Nomadic) Locust** (*Nomadacris septemfasciata*) (**NSE**): Although not reported, fledging is expected to have commenced in outbreak areas in the February.

**Tree Locust, *Anacridium spp.*** tree locust outbreak was reported in Turkana, Kenya in February.

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

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

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

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

**Fall Armyworm (*Spodoptera frugiperda*) (FAW):** FAW outbreaks were reported in Ethiopia, Malawi, Mozambique, Tanzania, Zambia and Zimbabwe during February and control operations were undertaken by the affected farmers with technical and material assistance from the Ministries of Agriculture (for more info, refer to pages 7-9).

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

**Southern Armyworm (*Spodoptera eridania*) (SAW):** Though not yet reported in Africa, a pest native to the Americas could be a serious threat to small-holder farmers across the continent and elsewhere.

**Quelea birds (QQU):** QQU bird outbreaks were reported in Ethiopia, Tanzania and Kenya attacking rice and/or sorghum during February. Aerial control operations were carried out by the Desert Locust Control Organization in Eastern Africa (DLCO-EA) in collaboration with the Ministries of Agriculture.

*Active surveillance, monitoring, reporting, sharing information and timely implementation of preventive interventions remain critical to abate the threats ETOPs pose to food security and livelihoods of vulnerable communities.*

*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 research centers, academia, private sector, NGOs and others and issues concise analytical reports and forecasts to stakeholders across the globe through its monthly Bulletins. **End summary***

## RÉSUMÉ

**La situation du Criquet pèlerin (*Schistoseca gregaria* - SGR)** est restée grave dans la région du foyer central (COR) le long des côtes de la mer Rouge au Soudan, en Érythrée et en Arabie saoudite et, dans une certaine mesure, en Égypte, où des opérations de lutte ont traité plus de 82 000 hectares des milliers d'ha en février. La région de la flambée occidentale (WOR) est restée de palourde et une reproduction limitée a été rapportée au Maroc et au Mali au cours de ce mois. En février, dans le cadre des opérations de lutte contre la flambée de flore orientale (EOR), des groupes d'ailés et de petits essaims ont été traités sur quelques milliers d'ha.

**Prévisions:** avec le dessèchement de la végétation des deux côtés de la côte de la mer Rouge, les criquets se déplaceront vers les zones de reproduction printanière de la vallée du Nil, dans le nord du Soudan et à l'intérieur de l'Arabie saoudite, et commenceront probablement à se reproduire dans les mois prochains. Dans le WOR, une reproduction à petite échelle aura lieu en Algérie, au Maroc et au Mali au cours de la période de prévision, mais aucun développement significatif n'est prévu. Dans la RAH, des larves et des groupes vont se former dans le sud de l'Iran et une reproduction à petite échelle pourrait avoir lieu dans l'ouest du Pakistan, où des précipitations modérées ont été signalées en février.

**Criquet nomade rouge (*Nomadacris septemfasciata*) (NSE):** Bien que cela n'ait pas été signalé, la mue devrait avoir commencé dans les zones d'épidémie en février.

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

**Le criquet pèlerin, *Anacridium* spp.:** une épidémie a été signalée dans le comté de Turkana au Kenya en février.

**Criquet d'Amérique du Sud, *Schistocerca cancellata* (SCA):** Aucune mise à jour n'a été reçue à la date de rédaction du présent Bulletin.

**Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI):** la situation acridienne dans la région de la CAC devrait être restée calme en février.

**Chenille Légionnaire d'automne (*Spodoptera frugiperda*) (FAW):** des foyers d'infection à FAW ont été signalés en Éthiopie, au Malawi, au Mozambique, en Tanzanie, en Zambie et au Zimbabwe en février et des opérations de lutte ont été entreprises par les agriculteurs concernés avec l'assistance technique et matérielle des ministères de l'Agriculture info, reportez-vous aux pages 7-9).

**Chenille Légionnaire africaine (AAW) (*Spodoptera exempta*):** aucun foyer d'AAW n'a été signalé en février.

**La chenille légionnaire du Sud (*Spodoptera eridania*) (SAW):** Bien qu'il n'ait pas encore été signalé en Afrique, un ravageur originaire des Amériques pourrait constituer une menace sérieuse pour les petits exploitants agricoles du continent et d'ailleurs.

**Quelea birds (QQU):** Des foyers d'oiseaux QQU ont été signalés en Éthiopie, en Tanzanie et au Kenya, attaquant le riz et / ou le sorgho en février. Des opérations de lutte aérienne ont été menées par l'Organisation de lutte contre le criquet pèlerin en Afrique orientale (DLCO-EA) en collaboration avec les ministères de l'agriculture.

La surveillance active, la surveillance, la notification, le partage d'informations et les interventions préventives en temps opportun restent critiques en tout temps pour réduire les menaces que posent les ETOP pour les cultures et les pâturages.

**L'USAID / OFDA / PSPM** surveille régulièrement les opérations ETOP en étroite collaboration avec son réseau de PPD / DPV nationaux, d'entités régionales et internationales de surveillance et / ou de lutte contre les ravageurs, notamment la FAO, la CLCPRO, le CRC, le DLCO-EA et l'IRLCO-CSA, ainsi que centres de recherche, universités, secteur privé, ONG et autres et publie des rapports analytiques concis et des prévisions aux parties prenantes du monde entier par le biais de ses bulletins mensuels. Fin du résumé

### OFDA's Contributions to ETOP Abatement Interventions

OFDA-BFS co-funded FAW Field Guide for Integrated FAW Management [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 were utilized for the training and scouting along with those of CABI, DLCO-EA, ICIPE and FAO.

*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.*

*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.*

**Note:** This ETOP Bulletin and previous SITREPs can be accessed on USAID Pest and Pesticide Management website: [USAID Pest and Pesticide Monitoring](#)

### Weather and Ecological Conditions

In **WOR**, insignificant precipitation was reported during February and ecological conditions generally remained unfavorable in the region this month.

Only pockets of green vegetation were detected in a few places in Morocco, Mali and Algeria.

In **COR**, light showers were reported on the coast of Eritrea, on adjacent areas in Sudan, and Djibouti. Moderate rain was recorded in the northern coast of Saudi Arabia. However, precipitation was overall reduced in the region and as a result vegetation began drying out in most of the winter breeding areas in the region during February.

In **EOR**, light to moderate rains fell on the southern coast and inland areas in Iran during the 1<sup>st</sup> half of February sustaining favorable ecological conditions. Good rains also fell in the coastal and the interior of Baluchistan in southwest Pakistan during the 2<sup>nd</sup> dekad of February and as a result ecological conditions will likely improve for locust breeding (FAO-DLIS).

**NSE Outbreak Regions:** During February, good rain (282.2 mm) was reported Kaliua near Malagarasi Basin in Tanzania and below normal (47.1 mm) was reported in Namwala near Kafue Flats in Zambia was recorded. In Mozambique 103.0, 122.0 mm and 125 mm were recorded in Buzi-gorongosa and Dimba plains (IRLCO-CSA).

In **CAC**, no update was received at the time this Bulletin was compiled, but cold

and dry weather is expected to have prevailed in the region during February.

**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:** Local breeding was reported south of the Atlas Mountains in Morocco and small-scale breeding was detected in northern Mali during February. The situation remained calm in other part of WOR during this month including **Tunisia**, Algeria, and Niger during this month. No locusts were

reported from Burkina Faso, Chad, Libya or Senegal and no locust are expected to be present in these countries during this time (CNLA/Mauritania, CNLAA/Morocco, CNLAP/Mali, FAO-DLIS, INPV/Algeria).

**Forecast:** In WOR, small-scale breeding is likely south of the Atlas Mountains in Morocco and Algeria and limited breeding may also continue in Mali during the forecast period (CNLA/Mauritania, CNLAP/Mali, CNLAA/Morocco, CNLA/Tunisia, FAO-DLIS, INPV/Algeria).

**SGR – COR:** Good rains that fell in winter breeding areas on the Red Sea coasts during October and November caused locusts to continue developing in **Sudan, Eritrea, Saudi Arabia** and southeastern **Egypt** during February. 2<sup>nd</sup> generation breeding, hatching, as well as group, band and swarms continued and increased locust populations in the north coast of **Saudi Arabia, Sudan** and northern and central coastal areas in **Eritrea** and **Egypt**. I

intensive ground and aerial control operations treated 82,916 ha during February (Sudan treated 38,207, Eritrea treated 22,219 ha, Saudi Arabia treated 18,468 ha and Egypt treated 4,022 ha during this month). As a result, locust populations were reduced significantly along the Red Sea coasts.

In **Yemen**, groups of mature adults were reported in the interior of the country close to Thamoud and Hadramout and breeding continued in Al Maharara in the eastern province near the Empty Quarter. Laying adults and hoppers were reported. Scattered mature and immature adults were also detected in this area, in West Hadrhamaout and on the south coast of the Arabian Sea where limited breeding was reported (FAO-DLIS).

**Forecast:** Intensive control operations that treated more than 135,000 ha in January and February combined reduced locust populations significantly along both side of the Red Sea coasts. As vegetation begins drying up in these areas, residual populations - hopper groups and bands, adult groups as well as swarms will form and some swarms will move from coastal Eritrea, Sudan and Saudi Arabia to spring breeding areas in the Nile Valley in the interior of northern Sudan and Saudi Arabia, respectively and begin breeding during spring (FAO-DLIS, LCC/Oman, PPD/Djibouti).

**SGR - EOR:** Control operation treated adult groups and a few small swarms on 4,852 ha on the southern coast of Iran in February where egg laying was reported (FAO-DLIS).

**Forecast:** Hatching and group and hopper formations will likely occur in southern Iran and small-scale breeding is likely on western Pakistan, but significant developments are not expected in EOR during the forecast period.

*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.*

**Red (Nomadic) Locust (NSE):** Although fledging was expected to have taken place, no reports were received from countries in the NSE southern outbreak region during February (IRLCO-CSA).

**Forecast:** Hoppers will likely continue fledging and form immature adults which will concentrate and form small swarms as vegetation dries and burning starts.

IRLCO-CSA continued appealing to member states for resource to launch ground and aerial survey. Timely surveillance and preventive interventions remain critical to curtail pest threats to food security and livelihoods of small-holder farmers (IRLCO-CSA, OFDA/AELGA).

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

**Forecast:** Limited activities may occur in the primary outbreak areas in **Mexico** and **Nicaragua** during the forecast period.

**South American Locust, *Schistocerca cancellata* (SAL):** No update was received at the time this bulleting was compiled, but it is likely that the pest was present in February.

**Forecast:** *The SCA will likely continue appearing in Argentina, Bolivia and Paraguay as favorable ecological conditions and warmer weather persist in the region.*

***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 in CAC and the situation is expected to have remained calm during February and the region will remain calm till spring.

**Tree locust: *Anacridium spp.*** outbreak was reported in Turkana County of Kenya during February.

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

FAW infestations were reported in February in irrigated areas in 76 villages in 8 Districts in the Southern Nations and Nationalities Peoples Administrative Region in **Ethiopia** and chemical and manual control treated more than 1,306 ha of maize and sorghum (DLCO-EA).

In **Tanzania** FAW outbreaks were reported in Morogoro, Tanga and Rukwa Regions and control operations were launched by the affected farmers with technical and material support from MinAgri. FAW outbreaks were also reported in **Malawi** in Ncheu, Machinga, Mangochi, Blantyre and Nsanje where the pest was reported causing more than 20% damage to maize crops. Control operations were carried out by the affected farmers with material (35, 000 l of pesticides) and technical assistance from the MoAIWD. FAW was also reported in **Mozambique, Zambia and Zimbabwe** where control operations were carried out by the affected farmers with material and technical assistance from the national ministries (IRLCO-CSA,, PHS/Tanzania).

**Forecast:** FAW infestation will likely continue affecting irrigated and rainfed maize and other crops in several sub-Saharan African countries and in other regions during the forecast period.

Forecasters (including community Focal Persons of the CBFAMFEW project), others trap operators and extension agents must remain vigilance and alert farming communities and report moth and larval sightings to PPD staff and other concerned authorities.

#### **Activity updates:**

**USAID/OFDA** co-sponsored FAW project is being implemented by Center for

*Agriculture and Biosciences International (CABI), Desert Locust Control Organization for Eastern Africa (DLCO-EA), International Center of Insect Physiology and Ecology (ICIPE) and National MinAgri and other partners with FAOSFE managing the project. To date the project has completed Training of Trainers (ToT), community focal persons and villagers' training, installed functional mobile apparatus to strengthen monitoring, documenting and reporting FAW field situation; develop a ToT for field staff, prepared posters and flyers in different languages, conducted field assessments and backstopping, completed a mid-term review, etc.*

*USAID/OFDA senior technical advisor for pests and pesticides and project manager intends to visit the FAW project sites in the coming months.*



FAW larva feeding on fresh corn ear in Moshi district in Kilimanjaro Region of Tanzania (photo courtesy: Juma and Didas, June, 2018)



A fall armyworm (FAW) larva (caterpillar) comfortably resting between rows of corn kernels (Photo courtesy: Didas Moshi, DLCO-EA-Tanzania June, 2018).

*As of now, apart from sub-Saharan African countries, FAW has been reported in Yemen, India, Sri Lanka, Bangladesh, Myanmar, Thailand and China and it likely that the pest will continue spreading to other countries in southeast Asia and Pacific regions.*

*Note: Several species of natural enemies, including parasites, parasitoids, predators and entomopathogens have been discovered in Ethiopia, Kenya, Tanzania Madagascar, and India. Further studies are being conducted on the natural enemies both in Africa and Asia to better understand their safety, efficacy and adaptability along-side other agro-ecological means, including push-pull technology, etc. End note.*

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

<https://www.thehindu.com/news/national/karnataka/rav-aged-by-a-caterpillar/article25010469.ece>  
[http://www.nbair.res.in/recent\\_events/Pest%20Alert%2030th%20July%202018-new1.pdf](http://www.nbair.res.in/recent_events/Pest%20Alert%2030th%20July%202018-new1.pdf),

[http://www.exeter.ac.uk/news/featurednews/title\\_676373\\_en.html](http://www.exeter.ac.uk/news/featurednews/title_676373_en.html),

<http://www.fao.org/news/story/en/item/1148819/icode/>

<https://www.cimmyt.org/fall-armyworm-reported-in-india-battle-against-the-pest-extends-now-to-asia/>

USAID/OFDA-funded community empowerment project funded awareness raising and educational posters and fliers and ToT manual to support FAW interventions in six project countries in eastern Africa and the Horn. The posters and fliers are being translated to Swahili, Amharic, Ormomfa and other countries to the benefit of affected farmers. These documents will soon be posted online.

USAID/BFS and OFDA co-funded IPM based FAW management guidance document is now available in English and French: [Fall Armyworm in Africa: A Guide for](#)

[Integrated Pest Management](#) and will be available in Portuguese language.

USAID/BFS and CABI jointly developed an easy-to-use one-page pest management decision guide (PMDG) for dozens of countries across Africa and continues. The PMDG is being translated into local languages to benefit rural communities. BFS and SAWBO (Scientific Animation Without Borders) jointly developed a short, animation video clip on FAW biology, detection, scouting, monitoring, control and awareness raising for small-holder farmers <https://sawbo-animations.org/video.php?video=/www.youtube.com/mbed/5rxlpXEK5g8>

<https://ecd.usaid.gov/repository/pdf/50065.pdf>

*FAO developed an interactive FAW Risk-Index heat map to help monitor potential risk of FAW infestation in country where the pest presence was reported*

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

### **Additional sources on FAW**

CABI FAW Portal within the ISC contains identification guides, manuals (including the USAID/CIMMYT IPM manual), videos, photos, abstracts on the latest FAW research: <https://www.cabi.org/ISC/fallarmyworm>

*Armyworm Network: A web resource for armyworm in Africa and their biological control:* <http://www.armyworm.org/>

<https://www.plantwise.org/pesticide-restrictions>

*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>

*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/>  
[http://www.fao.org/fileadmin/templates/fcc/map/map\\_of\\_affected\\_areas/Fall\\_Armyworm\\_brief\\_-\\_15Dec2017\\_.pdf](http://www.fao.org/fileadmin/templates/fcc/map/map_of_affected_areas/Fall_Armyworm_brief_-_15Dec2017_.pdf)

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

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

NURU, a mobile phone application that 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/icode/>

FAO monitoring and interactive FAW map:

<https://app.powerbi.com/view?r=eyJrIjoiMzY2NmYmYtZDEwMS00ZTU0LTgwMzQtMDZhZjE3NDVjOTQ3IiwidCI6IjE2M2FjNDY4LWFiYjgtNDRkMCO4MWZkLWQ5ZGIxNWUzYUY5NiIsImMiOjhh9>

<https://play.google.com/store/apps/details?id=org.fao.faw>

<https://entomologytoday.org/2018/11/20/not-just-maize-africas-fall-armyworm-crisis-threatens-sorghum-other-crops/>

*Safer and affordable, ecologically sustainable, economically sound, socially acceptable IPM based proven pest management intervention methodologies and assessment tools need to be available and widely disseminated to manage the threat/damage pests pose to the farming communities, more so small-holder farmers.*

**African Armyworm (AAW):** No AAW outbreak was reported during February DLCO-EA, (IRLCO-CSA).

**Forecast:** AAW outbreak season will commence in the secondary breeding regions following the onset of the rains during the forecast period in Kenya and to a lesser extent northern Tanzania.

*Fully functional pheromone traps must be maintained at all times and monitoring must commence at the foot-hills of the seasonal rains. Trap operators are advised to collect trap data regularly and report to national forecasting officers. Active surveillance and appropriate preventive interventions remain critical to avoid major crop damage (OFDA/AELGA).*

**Note:** has developed printable and web-based interactive maps for AAW project sites in project and potential participating countries:

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

<http://usaid.maps.arcgis.com/apps/Viewer/index.html?appid=9d2ab2f918284595819836d1f16a526f>

OFDA/PSPM is considering a similar map for the CBFAMFEW project sites

**Southern Armyworm (*Spodoptera eridania*) (SAW/SER).** If it arrives, the SAW, a pest native to the Americas and present from southern region of the USA to Argentina, could be a serious threat to small-holder farmers across Africa and elsewhere, much the same way other invasive species, including FAW, tomato leaf miner, Mediterranean fruit fly and may more are harming the farming communities.

*SAW is probably the most polyphagous (can feed on multiple host plants) of all armyworm species that belong to the Genus Spodoptera. This pest is known to*

feed on more than 200 species of plants in 58 families, mostly broadleaf, including, but not limited to cabbage, carrot, cassava, collard, cotton, cowpea, eggplant, okra, pepper, potato, soybean, sweet potato, tomato, avocado, citrus, peanuts, sunflower, tobacco and various flowers and watermelon  
[http://entnemdept.ufl.edu/creatures/veg/leaf/south\\_hern\\_armyworm.htm](http://entnemdept.ufl.edu/creatures/veg/leaf/south_hern_armyworm.htm). (comparison: FAW has a host range of 80-100 plant species)

SAW can produce multiple generations per year and completes its life cycle in 30-40 days. A female moth can lay 1,500-3,000 eggs under favorable temperature and host plant conditions over her lifetime.

Control operations for SAW can include natural enemies - parasitoids, predators, and pathogens; synthetic and biological pesticides, as well as botanical agents and other technologies.



A mature SAW larva (caterpillar) (file photo UF)

The larvae of this pest are mostly external feeders (some can bore into fruits such as tomatoes, etc.) making direct application of safer, effective and affordable pesticides more effective than on FAW.

*Strong quarantine services are critical to prevent such pests from entering a new territory.*

**Quelea (QQU):** QQU outbreaks were reported in irrigated rice schemes in

Kirinyaga County in **Kenya** and in irrigated Rice schemes in Misenyi District in Kagera Region in **Tanzania** (a site where QQU infestations was being detected for the first time in the history of QQU surveillance in the country). In **Ethiopia**, QQU infestations were reported in irrigated wheat fields in 3 villages, in 3 Districts in the Afar Administrative Region. Aerial control operations were launched in all three countries by the DLCO-EA aircraft with materials and ground support by individual country's MinAgr (DLCO-EA, IRLCO-CSA).

**Forecast:** QQU breeding is likely to have commenced in Tanzania, Zimbabwe and the pest will likely continue being a problem to small grain cereal crops (sorghum, wheat, millet, rice, etc.) in several countries, including Ethiopia, Kenya, Tanzania, etc., during 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 grain and destroy the same amount each 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 February, 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 (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, contaminate making it unfit for human consumption, not to mention the

zoonotic disease this pest carries and can 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 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** encourages the use of alternatives to hard core pesticides and promotes an IPM approach to minimize risks associated with pesticide stockpiling. A judiciously executed triangulation of surplus stocks from countries with large inventories to countries that can safely and effectively utilize can create a win-win situation worth considering.

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

Inventory of national strategic stocks of SGR pesticides changed during February with 38,207 ha treated in Sudan, 22, 219

ha treated in Eritrea, 18,468 ha treated in Saudi Arabia and 4,022 ha treated in Egypt and 4,852 ha were treated in Iran totaling areas treated during February to 87,768 ha.

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

Country	Quantity (l/kg)*
Algeria	1,186,842~
Chad	34,100
Egypt	68,070~ (14,278 ULV, 49,770 I)
Eritrea	7,695~
Ethiopia	9,681~
Libya	25,000~
Madagascar	206,000~ + 100,000 <sup>D</sup>
Mali	3,600
Mauritania	40,000
Morocco	3,490,732 <sup>D</sup>
Niger	75,750~
Oman	10,000~
Saudi Arabia	70,889~
Senegal	156,000~
Sudan	129,596
Tunisia	62,200 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 = *GreenMuscle*<sup>TM</sup> (fungal-based)

biological pesticide)

### LIST OF ACRONYMS

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

Hoppers	young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)	SFR	<i>Spodoptera frugiperda</i> (SFR) (Fall armyworm (FAW))
JTWC	Joint Typhoon Warning Center	SGR	<i>Schistoseca gregaria</i> (the Desert Locust)
Kg	Kilogram (~2.2 pound)	SPI	<i>Schistocerca piceifrons piceiferons</i> (Central American Locust)
L	Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)	SSD	Republic of South Sudan
LCC	Locust Control Center, Oman	SPB	Southern Pine Beetle ( <i>Dendroctonus frontalis</i> ) – true weevils
LMC	<i>Locusta migratoriacapito</i> (Malagasy locust)	SWAC	South West Asia DL Commission
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 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
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		
QQU	<i>Quelea Qulelea</i> (Red Billed Quelea bird)		
SARCOF	Southern Africa Region Climate Outlook Forum		
SCA	<i>Schistocerca cancellata</i> (South American Locust)		

**Point of Contact:**

If you need more information or have any questions, comments or suggestions or know someone who would like to freely

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