

Emergency Transboundary Outbreak Pest (ETOP) Situation Update for April with a forecast through mid-June, 2018
résumé en français est inclus

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹) situation remained generally calm in the western, central and eastern outbreak regions and only small-scale breeding was reported near irrigated agricultural fields in Adrar in Algeria and isolated adults were detected in a few places in the central and eastern regions during April.

Forecast: The SGR situation is expected to remain calm in the Western Outbreak Region (**WOR**) where generally unfavorable ecological conditions persisted. Limited breeding may occur in the Central Outbreak Region (**COR**) and the Eastern Outbreak Region (**EOR**), but significant developments are not likely during the forecast period.

Central America Locust, *Schistocerca piceifrons piceiferons* (CAL): Adult, solitary and transiens CAL were reported in the Yucatan Peninsula in Mexico and in León, Nicaragua during April. Biological (*Metharhizium acridium*) and chemical pesticides are being employed to control the pest. CAL belongs to the same genus as the Desert Locust and it is native to the tropical Central and South America.

Red (Nomadic) Locust (*Nomadacris septemfasciata*) (NSE): NSE situation is of a concern as swarms have started forming in Malawi where a ground survey team detected high density populations, an indication for a potentially escalating swarm formations in the coming weeks. The situation is also potentially dangerous in Tanzania, Mozambique and Zambia where swarms are expected to form following the seasonal vegetation burning to commence during the forecast period.

Fall Armyworm (*Spodoptera frugiperda*) (FAW): FAW continued being a problem to maize and other cereal crops in eastern and southern Africa in April (refer to pages 9-11 for additional information).

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

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

Italian (CIT), Moroccan (DMA), Asian Migratory Locusts (LMI): Locust activities were not reported during April. However, hatching will gradually begin in some Central Asian counties, but significant developments are not expected during the forecast period.

Quelea birds (QQU): QQU birds were reported in irrigated rice and sorghum in Busia and Siaya Counties in Kenya. In Tanzania, outbreaks were reported in Morogoro, Mbeya, Mwanza and Musoma regions. Control operations were launched in both countries to minimize crop damage.

Active surveillance, monitoring and timely preventive interventions remain critical to abate any threats ETOPs pose to crops and pasture.

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 provides timely analytical bulletins and reports to stakeholders across the globe.
End summary

RÉSUMÉ

La situation du Criquet pèlerin (*Schistoseca gregaria* - SGR) est restée globalement calme dans les régions de l'ouest, du centre et de l'est et seule une reproduction à petite échelle a été signalée près des champs agricoles irrigués à Adrar en Algérie et des ailés isolés ont été détectés dans quelques endroits du centre. et les régions de l'Est en avril.

Prévoir: La situation du SGR devrait rester calme dans la Région de l'Ouest de l'Ouest (WOR), où les conditions écologiques généralement défavorables ont persisté. Une reproduction limitée peut se produire dans la région centrale de l'épidémie (COR) et dans la région de l'est de l'Est (EOR), mais des développements significatifs ne sont pas probables pendant la période de prévision.

Criquet Amérique centrale, Schistocerca piceifrons piceiferons (CAL): Des CAL adultes, solitaires et transciens ont été signalés dans la péninsule du Yucatan au Mexique et à León, au Nicaragua en avril. Des pesticides biologiques (*Metharhizium acridium*) et chimiques sont utilisés pour lutter contre le ravageur. CAL appartient au même genre que le criquet pèlerin et il est originaire de l'Amérique centrale et du Sud tropicale.

Criquet nomade rouge (Nomadacris septemfasciata) (NSE): La situation des NSE est préoccupante car des essaims ont commencé à se former au Malawi où une équipe d'étude au sol a détecté des populations à forte densité, ce qui pourrait indiquer une escalade potentielle des essaims. La situation est également potentiellement dangereuse en Tanzanie, au Mozambique et en Zambie, où l'on s'attend à ce que des essaims se forment suite à la mise en route de la végétation saisonnière pendant la période de prévision.

Chenille Légionnaire d'automne (Spodoptera frugiperda) (FAW): Le FAW a continué d'être un problème pour le maïs et les autres cultures céréalières en Afrique orientale et australe en avril (voir pages 9-11 pour plus d'informations).

Chenille Légionnaire africaine (AAW) (Spodoptera exempta): L'épidémie d'AAW n'a pas été signalée en avril, mais l'organisme nuisible apparaîtra probablement en Afrique de l'Est et dans la région de Horn durant la période de prévision.

Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI): Les activités acridiennes n'ont pas été signalées en avril. Cependant, l'éclosion commencera graduellement dans certains pays d'Asie centrale, mais des développements significatifs ne sont pas attendus pendant la période de prévision.

Quelea birds (QQU): Des oiseaux QQU ont été signalés dans du riz irrigué et du sorgho dans les comtés de Busia et de Siaya au Kenya. En Tanzanie, des foyers ont été signalés dans les régions de Morogoro, Mbeya, Mwanza et Musoma. Des opérations de lutte ont été lancées dans les deux pays afin de minimiser les dégâts sur les cultures.

La surveillance active, le suivi et les interventions préventives opportunes restent essentiels pour réduire les menaces que les ETOP représentent pour les cultures et les pâturages.

L'USAID / OFDA / PSPM surveille régulièrement les **ETOP** en étroite collaboration avec son réseau national PPV / DPV, les entités régionales et internationales de surveillance et / ou de contrôle des ravageurs, notamment la FAO, la CLCPRO, le CRC, le DLCO-EA et l'IRLCO-CSA. bulletins et rapports aux parties prenantes à travers le monde. Résumé de fin

OFDA's Contributions to ETOP Abatement Interventions

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 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 four National level ToTs and trained 80 *National/county/sub-county officers/staff* in Tanzania, Ethiopia, Kenya and Rwanda between February 27 and April 2nd, 2018. Similar ToTs will be conducted in Uganda and Burundi in April, 2018. The OFDA-BFS co-funded FAW Field Guide:

https://feedthefuture.gov/sites/default/files/resource/files/FallArmyworm_IPM_Guide_forAfrica.pdf) and FAO FAW IPM Manual for FFS were utilized during the ToTs.

In **Ethiopia**, district level stakeholders' meetings have been conducted in all 5 project districts and covered 50 villages and 102 participants from 23-28 April 2018

In **Kenya**, district level stakeholders' meetings are in progress (conducted in Subukia district on 9th May 2018 and scheduled for the remaining 4 districts for 15-23 May):

Plans are in progress for the remaining 4 participating countries

Rwanda has scheduled community training for 28th to 29th May 2018 for all five districts and is expected to cover 50 villages and 100 villagers

Ethiopia, Kenya and Tanzania will conduct the community training in the next 2 weeks

Burundi and Uganda are still in the planning stage.

Pheromone traps have been issued to all participating countries

Mobile phones are being procured for all villages to be distributed to community focal points following training.

CABI (Nairobi) has drafted community training field manual on FAW. The Manual is currently under review and design layout by the CABI UK team. The training manual which focuses on district officers, extension staff and rural communities will be circulated among partners for feedback. Tools for surveillance and monitoring FAW are being distributed to participating countries.

OFDA/PSPM is working with interested parties to explore means and ways to expand innovative technologies to other 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.

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

In **WOR** SGR region, ecological conditions remained largely dry and unfavorable during April except in a few wadis and irrigated crops in Algeria and southern and southeastern Morocco. Only green vegetation was detected in irrigated areas and some wadis whereas overall

vegetation was drying in most wadis in Hoggar Algeria during April (**CNLA/Chad, CNLA/Mali, CNLA/Mauritania, CNLAA/Morocco, CNLA/Tunisia, FAO-DLIS, NLCC/Libya, NOAA**).

Good rains fell in several areas in **COR** along the northern Red Sea coasts in **Eritrea**, in eastern **Ethiopia** and northern **Somalia**, as well as in spring breeding areas in **Saudi Arabia**, and other regions including South Sudan received above average rainfall during April. In **Yemen**, light and moderate rains were reported in the northern parts of Tehama between Suq Aps and W. Hyran, and in the southern parts in Almansoria. Light rain was also reported in Al Jawof, Marib, Shabwah and Hadhramout, but ecological conditions remained unfavorable for locusts to persist and develop here as well as in the Aden coastal plains during this month (NOAA, (DLMCC/Yemen, FAO-DLIS, LCC/Oman, NOAA, PPD/Sudan).

EOR: Light rain was reported in spring breeding areas in western Pakistan bordering areas in southeastern Iran during the 2nd dekad of April (FAO-DLIS).

NSE Outbreak Regions: Heavy rainfall continued to fall in parts of Kenya and northern Tanzania causing extensive flooding and destruction. Significant rains were recorded near Red Locust outbreak areas in Tanzania and Mozambique. Light to low rainfall were received in Zambia and Malawi signaling the end of the rainy season. In Tanzania, heavy rain was reported in Masenge (Wembere plains), Kaliua (Malagarasi Basin), Muze(Lake Rukwa plains) and Mpanda (Iku-Katavi plains). Moderate rainfall was reported in Mafambise(Buzi plain), Gorongosa

(Gorongosa plain), and Caia (Dimba plain) in Mozambique. In Malwai light rain was reported in Makoka (Lake Chilwa plains) and Ntaja (Lake Chiuta plains) during April (IRLCO-CSA).

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

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** and only small-scale breeding was detected and controlled near irrigated agricultural fields in Adrar in **Algeria** by survey teams that were deployed to Adrar, Illizi and Tamanrasset districts during April. No locusts were detected during surveys in Fom Zguid areas in Oued Draa Valley in Morocco in April. No surveys were conducted and no locusts were reported in other countries in **WOR** during this month (CNLA/Chad, CNLA/Mali, CNLA/Mauritania, CNLAA/Morocco, CNLA/Tunisia, FAO-DLIS, INPV/Algeria, NCDLC/Libya).

Forecast: The SGR situation will likely remain calm and only limited-scale breeding may occur in southeastern Morocco and central Algeria if rainfall occurs in those areas during the forecast period (CNLA/Chad, CNLA/Mali, NLCC/Libya, CNLA/Mauritania, CNLAA/Morocco, CNLA/Tunisia, INPV/Algeria).

SGR (Desert Locust) - COR: No locusts were reported during surveys that covered the central and southern coastal areas reaching to the Toker Delta in Duran in April. During the first dekad of April, DLCCM carried out surveys in winter breeding areas between Zinjibar and BeerAli along the Gulf of Aden coastal plains in **Yemen**, but no locusts were detected during this time. No locusts were reported in areas that were surveyed in North and South Al Batinah, Musandam, and Al Bureimi in **Oman** during surveys. No reports were received

from Djibouti, Ethiopia, Somalia, Eritrea or Egypt during April (DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Sudan).

Forecast: The SGR situation will generally remain calm in COR during the forecast period and significant developments are no likely (DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Sudan).

SGR - EOR: The SGR situation generally remained calm in EOR and only isolated adults may have been present in southeastern regions of Iran during April (FAO-DLIS).

Forecast: The EOR will likely remain calm and only limited-scale breeding may occur in southeast **Iran** and perhaps southwest **Pakistan** provided rain fall occurs.

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 progressing well. 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.*

Schistocerca piceifrons piceifrons - Central American Locust (CAL): During April, CAL was off season and only patches of low density solitary and transient adults were reported in the Yucatan Peninsula in **Mexico** and in León,

Nicaragua. Biological pesticide (*Metharhizium acridium*) and chemical pesticides are being employed to control the pest.



Mating adult CAL in Yucatan, Mexico (photo courtesy: Marion Poot, 2018)

Forecast: After the first rains of the season (April-May) mating will begin and the soil will be ideal for oviposition leading to first generation populations appearing from June through September. Control operations will commence thereafter.



Adult CAL basking in the morning sun in Yucatan Mexico (photo courtesy: Mario Poot, 2018)

Note: CAL belongs to the same genus as the Desert Locust and it is native to the Central and South America. It is an important pest in the tropical regions of the Americas.

CAL is found in Belize, México, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panamá. The most recent outbreaks of CAL in the region were manifested in 2017 in Nicaragua, in 2016 in El Salvador and in 2014 in Yucatan peninsula in Mexico. 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 ecological conditions. National entities routinely monitor the pest. The Federal and State Governments are coordinate with farmers to implement efficient management interventions to prevent 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)

Red (Nomadic) Locust (NSE): NSE situation is a cause for concern given that swarms have started forming in **Malawi** while the same is expected in the primary outbreak areas in **Tanzania** and a few places in **Mozambique** and **Zambia**.

A ground survey team reported high density populations in Lake Chilwa/Lake Chiuta plains in **Malawi**, a situation likely to lead to an escalation in swarm formations in the coming weeks. Flooding hampered continuation of the survey operations and IRLCO-CSA is working closely with MoA/Malawi to implement aerial survey operations. A potentially dangerous situation is also likely in Ikuu-Katavi plains, Malagarasi Basin and Lake Rukwa plains in **Tanzania**; in Dimba plains in **Mozambique** and Kafue Flats in **Zambia** where swarms are expected to form concentrations and groups as the

seasonal grass burning will soon commence (IRLCO-CSA).

Forecast: As vegetation starts drying up in the outbreak areas, more NSE populations and concentrations will begin appearing, more so in areas where vegetation is burned. Swarms will continue forming in the primary breeding areas in Lake Chilwa/Lake Chiuta plains in Malawi and the same is expected to occur in Ikuu-Katavi, Malagarasi Basin and Lake Rukwa in Tanzania; Kafue Flats in Zambia and Dimba plains in Mozambique during the forecast period and exacerbated by grass burning. Aerial surveys, and preventive control interventions will be necessary to avoid escalation of swarm formations which will migrate from the outbreak areas and cause damage to crops and strain food security in the region. The IRLCO-CSA is liaising with Member States for resources to facilitate timely survey and control operations (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.

Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC): No updates were received during April, however, limited activities may have commenced in a few places in the southern parts of the CAC region.

Forecast: DMA will begin hatching gradually in a few countries in Afghanistan, Tajikistan, Turkmenistan and Uzbekistan during the forecast

period, but significant developments are not expected. The Caucasian countries will likely remain calm unless the seasonal temperatures increase during the forecast period (OFDA/PSPM).

Fall armyworm (FAW) (*Sproptera frugiperda*)

FAW continued being a problem to maize and other cereal crops in Eastern and southern Africa.

In **Ethiopia**, FAW was reported on 85,000 ha of the 365,000 ha of maize plants. The pest was detected in some 1,541 kebeles spread across 225 districts in seven regions during 19-28 April, 2018. Chemical and mechanical control operations were carried out on more than 27,000 ha (PPD/Ethiopia).



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

In 2017 cropping season FAW infested more than 692,000 ha of 2.9 million ha of maize planted. On average the damage was estimated at 5.2% with a total loss of more than 134,000 tons of crops or close to \$29 million across the country. FAW outbreaks that affected millions of small-holder farmers across the country during 2017 cropping seasons forced GoE and partners to prioritize implementation

of the 2018 FAW work plan (OCHA 11/3/2018).

In **South Sudan**, FAW was detected in early planted maize crops in Yambio County in Western Equatorial State during late March into April. The pest was first detected in areas surrounding Yambio Town. As planting progresses across the country, the pest will continue appearing over vast areas. Active surveillance, monitoring, routine scouting and control interventions remain critical to abate major crop losses.

In **Kenya**, FAW outbreaks were reported in Kericho, Nyeri, Embu, Nakuru and Meru Counties attacking early planted maize. Control operations were launched by the affected farmers.



FAW larvae attacking maize plant (source: FAO South Sudan, 3/2018)

In **Tanzania**, FAW was reported in most regions of the country and control operations are being implemented by the affected farmers with technical and material assistance from the Ministry of Agriculture. Awareness raising among farmers and rural communities are being intensified through the CBFAMFEW and PHS (IRLCO-CSA, PHS/Tanzania).

In **Madagascar**, FAW was first reported in November 2017 and continued through February and March 2018. FAO dispatched an assessment team early March, 2018 to conduct assessments and provided training to NPPOs. Additional update was not received during April.



Images of FAW larvae heavily infected by *Metarhizium* sp. Entomopathogen, Madagascar, 2018; P. Chenwada)

In **Mozambique**, severe attack by Fall Armyworm on maize was reported from Sofala Province in central Mozambique. Monitoring and control were implemented in the affected areas. FAW situation has subsided in **Malawi, Zambia** and **Zimbabwe** maize crop had matured and/or was being harvested.

Forecast: FAW will remain being a threat to irrigated and rain-fed maize and other crops across several regions in Africa during the forecast period. This

situation has become more evident in countries with bimodal rainfall patterns and irrigated crops which allow uninterrupted presence of host plants for the pest to survive and continue breeding and cause damage to crops.

As of April 2018, FAW has been detected in all of sub-Saharan African countries, but Eritrea, Lesotho, Mauritius and Seychelles.



Map showing countries where FAW has been reported as of January 2018 (FAO)

Active surveillance and timely reporting and interventions remain critical.

The need for developing safer and ecologically sustainable, economically sound and socially acceptable IPM based management interventions, including effective tools for damage assessment remain critical.

FAOSFE is providing support to SSD and Somalia through country specific FAO Trust Fund projects (Japan funded FAW project, etc.).

<https://reliefweb.int/report/uganda/uganda-food-security-outlook-update-october-2017-january-2018>

Additional 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

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

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 due to FAW 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 has ended in the southern region in Malawi, Mozambique, Zambia, Zimbabwe, etc. No outbreaks were reported in the central region during April.

Forecast: AAW outbreak will likely appear in the central northern outbreak areas in Tanzania and Kenya and perhaps southern Ethiopia in areas where seasonal rains have been reported and likely cause damage to crops during the forecast period.

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/Viewer/index.html?appid=8ff7a2eefbee4783bfb36c3e784e29cb>. A similar map is also being developed for southern region: <http://usaid.maps.arcgis.com/apps/Viewer/index.html?appid=9d2ab2f918284595819836d1f16a526f> (click on the links for the maps). OFDA/PSPM intends to develop a similar map for FAW DDR project).

Quelea (QQU): QQU bird outbreaks were reported in irrigated rice and sorghum in Busia and Siaya Counties in **Kenya**. The pest was controlled with Fenthion. Tanzania QQU roosts were controlled on 165 ha in Dodoma Region by air. Significant QQU populations were also reported in Morogoro (Kilosa district), Mbeya (Mbalari district), Mwanza (Geita, Bunda and Butiama districts) and Musoma regions in **Tanzania** during April. Control operations were in progress at the time this bulletin was compiled. In **Zimbabwe**, QQU was reported in Pandamatenga area in Matabeleland Province. Control was undertaken by the Department of National Parks using ground sprayers and crop Protection Branch of the MinAgri was preparing for control operations in and around cropping areas at the time this report was compiled (IRLCO-CSA).

Forecast: QQU bird outbreaks will likely continue being a problem to maturing small grain cereal crops in **Kenya** and **Tanzania** 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 April, 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.

Inventories of Pesticide Stocks for SGR Prevention and Control

Inventory of strategic stocks of SGR pesticides remained unchanged during April.

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.

Table 1. ETOP Pesticide Inventory in Frontline Countries

Country	Quantity (l/kg)*
Algeria	1,188,708~
Chad	38,300
Egypt	68,070~ (18,300 ULV, 49,770 l)
Eritrea	17,122~ + 20,000 ^D
Ethiopia	9,681~
Libya	25,000~
Madagascar	206,000~ + 100,000 ^D
Mali	5,000
Mauritania	14,998 ^{DM}
Morocco	3,490,732 ^D
Niger	75,750~
Oman	10,000~
S. Arabia	89,357~
Senegal	156,000~
Sudan	169,710~
Tunisia	68,514 obsolete
Yemen	40,090 ^D + 180 kg GM~
*Includes different kinds of pesticide and formulations - ULV, EC and dust;	
~ data may not be current;	
^D = Morocco donated 100,000 l of pesticides to Madagascar and 10,000 l to Mauritania in 2015	
^D = In 2013 Morocco donated 200,000 l to Madagascar	
^D = Saudi donated 10,000 to Yemen and pledged 20,000 l to Eritrea	

^{DM} = Morocco donated 30,000 l of pesticides to Mauritania

GM = *GreenMuscle*TM (fungal-based biological pesticide)

LIST OF ACRONYMS

AAW	<i>African armyworm (Spodoptera expempta)</i>
AELGA	<i>Assistance for Emergency Locust Grasshopper Abatement</i>
AFCS	<i>Armyworm Forecasting and Control Services, Tanzania</i>
AfDB	<i>African Development Bank</i>
AGRA	<i>Agricultural Green Revolution in Africa</i>
AME	<i>Anacridium melanorhodon (Tree Locust)</i>
APLC	<i>Australian Plague Locust Commission</i>
APLC	<i>Australian Plague Locust Commission Bands groups of hoppers marching pretty much in the same direction</i>
ASARECA	<i>Association for Strengthening Agricultural Research in Eastern and Central Africa</i>
CABI	<i>Center for Agriculture and Biosciences International</i>
CAC	<i>Central Asia and the Caucasus</i>
CBAMFEW	<i>Community-based armyworm monitoring, forecasting and early warning</i>
CERF	<i>Central Emergency Response Fund</i>
CIT	<i>Calliptamus italicus (Italian Locust)</i>
CLCPRO	<i>Commission de Lutte Contre le Criquet Pélerin dans la Région Occidentale (Commission for the Desert Locust Control in the Western Region)</i>
CNLA(A)	<i>Centre National de Lutte Antiacridienne (National Locust Control Center)</i>
COR	<i>Central SGR Outbreak Region</i>

CPD	Crop Protection Division	ITF	Inter-Tropical Convergence Front = ITCZ)
CRC	Commission for Controlling Desert Locust in the Central Region	FAO-DLIS	Food and Agriculture Organizations' Desert Locust Information Service
CTE	<i>Chortoicetes terminifera</i> (Australian plague locust)	Hoppers	young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)
DDLC	Department of Desert Locust Control	JTWC	Joint Typhoon Warning Center
DLCO-EA	Desert Locust Control Organization for Eastern Africa	Kg	Kilogram (~2.2 pound)
DLMCC	Desert Locust Monitoring and Control Center, Yemen	L	Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)
DMA	<i>Dociostaurus maroccanus</i> (Moroccan Locust)	LCC	Locust Control Center, Oman
DPPQS	Department of Plant Protection and Quarantine Services, India	LMC	<i>Locusta migratoriacapito</i> (Malagasy locust)
DPV	Département Protection des Végétaux (Department of Plant Protection)	LMM	<i>Locusta migratoria migratorioides</i> (African Migratory Locust)
ELO	EMPRES Liaison Officers –	LPA	<i>Locustana pardalina</i>
EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases	MoAFSC	Ministry of Agriculture, Food Security and Cooperatives
EOR	Eastern SGR Outbreak Region	MoAI	Ministry of Agriculture and Irrigation
ETOP	Emergency Transboundary Outbreak Pest	MoARD	Ministry of Agriculture and Rural Development
Fledgling	immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully developed reproductive organs to breed	NALC	National Agency for Locust Control
GM	GreenMuscle® (a fungal-based biopesticide)	NCDLC	National Center for the Desert Locust Control, Libya
ha	hectare (= 10,000 sq. meters, about 2.471 acres)	NOAA (US)	National Oceanic and Aeronautic Administration
ICAPC	IGAD's Climate Prediction and Application Center	NPS	National Park Services
IGAD	Intergovernmental Authority on Development (Horn of Africa)	NSD	Republic of North Sudan
IRIN	Integrated Regional Information Networks	NSE	<i>Nomadacris septemfasciata</i> (Red Locust)
IRLCO-CSA	International Red Locust Control Organization for Central and Southern Africa	OFDA	Office of U.S. Foreign Disaster Assistance
ITCZ	Inter-Tropical Convergence Zone	PBB	Pine Bark Beetle (<i>Dendroctonus</i> sp. – true weevils)
		PHD	Plant Health Directorate
		PHS	Plant Health Services, MoA Tanzania
		PPD	Plant Protection Department
		PPM	Pest and Pesticide Management
		PPSD	Plant Protection Services Division/Department
		PRRSN	Pesticide Risk Reduction through Stewardship Network

QQU *Quelea Qulelea (Red Billed Quelea bird)*
SARCOF *Southern Africa Region Climate Outlook Forum*
SFR *Spodoptera frugiperda (SFR) (Fall armyworm (FAW))*
SPB *Southern Pine Beetle (Dendroctonus frontalis) – true weevils*
SGR *Schistoseca gregaria (the Desert Locust)*
SSD *Republic of South Sudan*
SWAC *South West Asia DL Commission*
PBB *Pine Bark Beetle*
PSPM *Preparedness, Strategic Planning and Mitigation (formerly known as Technical Assistance Group - TAG)*
Triangulation *The process whereby pesticides are donated by a country, with large inventories, but often no immediate need, to a country with immediate need with the help of a third party in the negotiation and shipments, etc. Usually FAO plays the third party role in the case of locust and other emergency pests.*
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

Tel.: + 1-202-712-1859

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