

**Emergency Transboundary
Outbreak Pest (ETOP) Situation
Update for March, 2017 with a
Forecast till mid-May, 2017
Un résumé en français est inclus**

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹) situation remained calm in March in the Western Outbreak Region (WOR). Only low density mature and immature adults were detected in the north and northwestern **Mauritania** and southern and southeastern **Morocco**.

The SGR situation remained calm in the Central Outbreak Region (COR) and only low density scattered solitary immature and mature adults were detected in the Red Sea coast in **Sudan**, southeast **Egypt** in Tehama and Gulf of Aden in **Yemen** during this month.

No locusts were reported in the Eastern Outbreak Region (EOR) in India, Iran, Pakistan or Afghanistan during March.

Forecast

As temperatures gradually rise and ecological conditions start becoming favorable in spring breeding areas, locusts will start breeding on a small-scale in **Morocco**, northern **Mauritania** and **Algeria** and perhaps

northern **Mali** and **Niger** on a small-scale, but overall the situation will remain calm in the WOR during the forecast period.

In COR, small scale breeding is likely in areas of recent rainfall in spring breeding areas in **Yemen, Saudi Arabia** and **Oman**, but significant activities are not expected during the forecast period.

In ERO, limited SGR activities are likely in spring breeding areas in southeastern **Iran**, but significant development are not likely in the region during the forecast period.

Active surveillance and timely preventive interventions remain critical at all time in areas where locust activities persist to abate any SGR threats to crops and/or pasture.

Red (Nomadic) Locust (NSE):

NSE remained a concern as ecological conditions for successful breeding prevailed during March in most of the outbreak areas in **Malawi, Mozambique, Tanzania** and **Zambia** (IRLCO-CSA).

Italian (CIT), Moroccan (DMA), Asian Migratory (LMI) Locusts: No locusts were reported in the Central Asia and the Caucasus (CAC) regions and the situation will remain calm until spring.

*Locust outbreaks were reported in **Bolivia** during March, but details*

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

were not Available at the time this report was compiled.

The African Armyworm (AAW):

AAW outbreaks were reported in Lindi, Coastal, Morogoro and Tanga Regions in Tanzania and Kwale and Coastal countries in Kenya during March and control operations were undertaken by the affected farmers with material and technical assistance from MoA (DLCO/EA, IRLCO-CSA).

Fall armyworm (*Spodoptera.*

frugiperda) (FAW): FAW invasions were detected in irrigated maize fields in the SNNP Region in **Ethiopia** during the 1st week of March and by

April it had spread over 41 Weredas in 8 Zones in the Region and reached

western Oromia Region causing damage to maize crops and Enset. MoA and affected farmers controlled more than 2,100 has with chemical and mechanical (Note: dislodging a single FAW larva through handpicking may mean reducing the next egg



threaten crops (PPD/Ethiopia).



mass by more than 1,000). The prevailing northward wind trajectory will likely carry the pest to the central and northern parts of the country and beyond and

The pest continued attacking late planted maize crops in **Kenya, Malawi and Zimbabwe** (IRLCO-CSA). In **Uganda**, AAW and FAW outbreaks were reported in twenty (20) districts across the Country and continued spreading (DLCO-EA)

Since December 2016, this fast spreading pest has been reported in central western Africa, southern Africa, southcentral and eastern Africa and the Horn. With the Inter-Tropical Front moving northward, it is likely that the pest will continue its northward migration and threaten crops in many countries.

If established, a phenomenon that appears to be highly likely given the nature of the pest, this aggressive and fast spreading pest of a kind, will likely affect agricultural production across maize and other cereal producing countries on the continent and threaten food security and livelihoods of tens of millions of households.

FAO in collaboration with national, regional, international entities convened a regional meeting in February in Harare, Zimbabwe where transboundary disease and pests, including FAW were discussed.

As a follow-up to the Harare meeting and to consult with stakeholder, FAO in collaboration with CIMMYT and other partners will be convening back to back technical and stakeholder consultation meetings in Nairobi,

Kenya during the last week of April 2017.

USAID/OFDA/PSPM continues closely monitoring the SFR situation and engaging with key national, regional and international partners to explore and investigate the most effective ways to address the looming threat to food security and livelihoods of vulnerable populations and provide advice and issue updates (**for further detail, please, see pages 13-15, below**).

Botswana: SFR outbreak and tomato leaf miner (*Tuta absoluta*) infestations were reported in **Botswana** during February. Both species are native to tropical South America and alien to **Botswana** and the African continent.

Quelea quelea (QQU): QQU outbreaks were reported in Kilimanjaro, Mbeya (Mbalali) and Dodoma (Bahi) regions in **Tanzania**. Control operation was being undertaken in Mbeya region and plans to carry control in other areas were in progress (IRLCO-CSA).

During March USAID/OFDA's Senior Technical Advisor for pests and pesticides participated in the final intern regional training-workshop and discussion meetings on the multi-donor funded Pesticide Stock Management System in Agadir, Morocco. In addition to USAID's technical advisor, participants from 12 countries from the CLCPRO and CRC regions as well as the Executive

Secretaries of the two regional commissions and the director of Agritech, Morocco attended the event. Hands-on practical exercises on pesticide quality control, as well as theoretical and practical training were provided to the country reps and discussions were held during this event.

The support for the PSMS from multi-donors, including USAID/OFDA and others were underscored and recognized by all participating countries and the two Commissions. USAID/OFDA Senior Technical Advisor for pests and pesticides underscored the importance of national and regional commitments to ensure sustainability and continued maintenance of the PSMS post-donor support to enable usefulness of this important tool

The **USAID/OFDA PSPM and ECA** co-funded Horn of Africa sub-regional emergency desert locust management project that is being implemented by FAO and DLCO-EA showing progress. Technical and material support being provided to participating locust-prone countries through the project is improving capacity to better monitor, report and prevent locusts in the sub-region. Participants that received training and surveillance materials are monitoring the locust situation and sharing monthly reports.

USAID/OFDA/PSPM continuously monitors ETOPs in close collaboration with its network with national

*PPDs/DPVs, Migratory Pest Units and international and regional organizations, including FAO, CLCPRO, CRC, DLCO-EA, IRLCO-CSA and provides timely updates and advices to HQ, field staff, partners and others as often as necessary. **End summary***

RÉSUMÉ

Le criquet pèlerin (Schistoseca gregaria – SGR): La situation de SGR est restée calme en mars dans la Western Outbreak Region (WOR). Seuls les adultes matures et immatures à faible densité ont été détectés dans le nord et le nord-ouest de la Mauritanie et le sud et le sud-est du Maroc.

La situation de SGR est restée calme dans la région d'émergence centrale (COR) et seuls des adultes matures matures et matures isolés de faible densité ont été détectés dans la côte de la mer Rouge au Soudan, au sud-est de l'Égypte à Tehama et au golfe d'Aden au Yémen au cours de ce mois.

Aucun Criquet pèlerin n'a été signalé dans la Région de l'Est (EOR) en Inde, en Iran, au Pakistan ou en Afghanistan en mars.

Prévoir

À mesure que les températures augmentent progressivement et que les conditions écologiques commencent à devenir favorables dans les zones de reproduction printanière, les Criquets sauvages

commenceront à se reproduire à petite échelle au Maroc, au nord de la Mauritanie et en Algérie, et peut-être au nord du Mali et au Niger à petite échelle, mais dans l'ensemble, la situation restera calme Dans le WOR pendant la période de prévision.

En COR, une reproduction à petite échelle peut se produire dans les zones de précipitations récentes dans les zones de reproduction estivale au Yémen, en Arabie Saoudite et à Oman pendant la période de prévision, mais des activités importantes ne sont pas prévues pendant la période de prévision.

Dans ERO, les activités limitées de SGR sont probablement dans les zones de reproduction du printemps dans le sud-est de l'Iran, mais un développement important n'est pas probable dans la région pendant la période de prévision.

La surveillance active et les interventions préventives en temps opportun demeurent critiques en tout temps dans les zones où les activités acridiennes persistent pour réduire les risques de SGR pour les cultures et / ou les pâturages.

Red (Nomadic) Locust (NSE):

La NSE est demeurée préoccupante car les conditions écologiques pour une reproduction réussie ont régné en mars dans la plupart des zones d'épidémie au Malawi, au Mozambique, en Tanzanie et en Zambie (IRLCO-CSA).

Italienne (CIT), Marocaine (DMA), Criminelles astronomiques asiatiques (LMI): Aucun criquet n'a été signalé dans les régions d'Asie centrale et du Caucase (CAC) et la situation restera calme jusqu'au printemps.

Des épidémies ont été signalées en **Bolivie** en mars, mais les détails n'étaient pas disponibles au moment où ce rapport a été compilé.

Cheille Légionnaire (AAW): Des épidémies d'AAW ont été signalées en Tanzanie et aux pays de Kwale et Coastal au Kenya en mars, dans les régions de Lindi, Coastal, Morogoro et Tanga et des opérations de contrôle ont été menées par les agriculteurs touchés avec l'assistance matérielle et technique de MoA (DLCO / EA, IRLCO-CSA).

Fall armyworm, (Spodoptera. Frugiperda) (SFR)(FAW): des invasions de FAW ont été détectées au cours de la première semaine de mars 2017 dans les champs de maïs irrigué dans la région de SNNP en Ethiopie et, en avril, elle s'est propagée sur 41 Weredas dans 8 zones de la région et a atteint l'ouest Région d'Ormomia causant des dommages aux cultures de maïs et à Enset. Le MoA et les agriculteurs touchés contrôlent plus de 2 100 personnes avec des produits chimiques et mécaniques (Note: le déplacement d'une seule larve de FAW par le biais de la sélection à la main peut signifier réduire la plus

récente masse d'oeufs de plus de 1 000). La trajectoire du vent dominant vers le nord entraînera probablement le ravageur dans les parties centrale et nord du pays et au-delà et menace les cultures (PPD / Ethiopie).

Le ravageur a continué à attaquer des cultures de maïs plantées tardivement au Kenya, au Malawi et au Zimbabwe (IRLCO-CSA). En Ouganda, des épidémies d'AAW et de FAW ont été signalées dans vingt (20) districts à travers le pays et ont continué à se propager à d'autres (DLCO-EA)

Depuis de décembre 2016, le ravageur a été signalé dans l'Afrique centrale occidentale, l'Afrique australe, l'Afrique australe et l'est de l'Afrique et la Corne. Lorsque le front inter tropical se déplace vers le nord, il est probable que le ravageur continuera sa migration vers le nord et menace les cultures dans de nombreux pays.

Si elle est établie, un phénomène qui semble être très probable compte tenu de la nature du ravageur, de cette espèce agressive et rapide, affectera probablement la production agricole dans le pays du maïs et d'autres pays producteurs de céréales sur le continent et menace la sécurité alimentaire et les moyens de subsistance de Des dizaines de millions de ménages.

La FAO, en collaboration avec des entités nationales, régionales et internationales, a organisé une réunion régionale en février à Harare,

au Zimbabwe, où les maladies transfrontalières et les ravageurs, y compris les FAW, ont été discutés.

Dans le prolongement de la réunion de Harare et pour consulter les parties prenantes, la FAO, en collaboration avec le CIMMYT et d'autres partenaires, convoquera des rencontres techniques et de consultation des parties prenantes à Nairobi, au Kenya, au cours de la dernière semaine d'avril 2017.

L'USAID / OFDA / PSPM continue de suivre de près la situation de SFR et de s'engager avec des partenaires nationaux, régionaux et internationaux clés pour explorer et enquêter sur les moyens les plus efficaces de faire face à la menace imminente pour la sécurité alimentaire et les moyens de subsistance des populations vulnérables et fournir des conseils et des mises à jour. Pour plus de détails, voir les pages 13-14 ci-dessous).

Botswana: les infestations de foyers SFR et de mine de tomate (*Tuta absoluta*) ont été signalées au Botswana en février. Les deux espèces sont originaires de l'Amérique du Sud tropicale et étrangères au Botswana et au continent africain.

Quelea quelea (QQU): des épidémies de QQU ont été signalées dans les régions de Kilimanjaro, Mbeya (Mbalali) et Dodoma (Bahi) en Tanzanie. Des opérations de contrôle étaient en cours dans la région de

Mbeya et les plans de maîtrise d'autres zones étaient en cours (IRLCO-CSA).

Au cours du mois de mars, le conseiller technique principal de l'USAID / OFDA pour les ravageurs et les pesticides a participé au dernier atelier de formation interne interne et aux réunions de discussion sur le système de gestion des stocks de pesticides financé par plusieurs donateurs à Agadir, au Maroc. Outre le conseiller technique de l'USAID, des participants de 12 pays des régions CLCPRO et CRC ainsi que les secrétaires exécutifs des deux commissions régionales et le directeur d'AgriTech, Maroc ont assisté à l'événement. Des exercices pratiques pratiques sur le contrôle de la qualité des pesticides, ainsi que des formations théoriques et pratiques ont été fournis aux représentants des pays et des discussions ont eu lieu au cours de cet événement.

Le soutien du PSMS auprès des donateurs multiples, y compris l'USAID / OFDA et d'autres, a été souligné et reconnu par tous les pays participants et les deux Commissions. Le conseiller technique principal de l'USAID / OFDA pour les ravageurs et les pesticides a souligné l'importance des engagements nationaux et régionaux pour assurer la durabilité et le maintien du soutien du PSMS post-donateur pour permettre l'utilité de cet outil important.

Le projet PSPM et ECA de l'USAID / OFDA a cofinancé le projet sous-régional de gestion des criquets pèlerins d'urgence de la Corne de l'Afrique qui est mis en œuvre par la FAO et DLCO-EA montrant les progrès réalisés. Le soutien technique et matériel fourni aux pays participants actives par les acridiens dans le cadre du projet améliore la capacité de mieux surveiller, signaler et prévenir les sauterelles dans la sous-région. Les participants qui ont reçu du matériel de formation et de surveillance surveillent la situation acridienne et partagent des rapports mensuels.

L'USAID / OFDA / PSPM surveille en permanence les ETOP en étroite collaboration avec son réseau avec les PPD / DPV nationaux, les unités de lutte antiparasitaire et les organisations internationales et régionales, y compris la FAO, CLCPRO, CRC, DLCO-EA, IRLCO-CSA et fournit des mises à jour et des conseils opportuns Le QG, le personnel sur le terrain, les partenaires et d'autres aussi souvent que nécessaire. Résumé final

OFDA / PSPM surveille de près la situation SFR (FAW) et les partenaires nationaux, régionaux et internationaux Engager pour explorer et étudier la façon la plus efficace pour faire face à la menace imminente à la nourriture SFR et les moyens de subsistance des populations vulnérables sécurité.

USAID / OFDA PSPM et la ECA co-financé Corne de l'Afrique projet de gestion d'urgence désert sous-régional criquets qui est mis en œuvre par la FAO et DLCO-EA est progresse. Le soutien technique et l'équipement fourni aux clubs de pays acridiennes sujettes à participer par le biais du projet est de mieux surveiller Amélioration de la capacité, le rapport et les criquets Prevent est la sous-région. Les participants ont reçu une formation et de surveillance Ce matériel surveillent la situation acridienne et le partage des rapports mensuels.

USAID / OFDA / PSPM surveille ETOPS de près par le biais du réseau STI avec PPDs / DPV, unités nuisibles migrants nationales et les organisations internationales et régionales, des friandises, y compris la FAO, la CLCPRO, CRC, DLCO-EA, IRLCO-CSA et fournit des mises à jour en temps opportun et de conseils à l'AC, champ le personnel, les partenaires et les autres aussi souvent que nécessaire. Note de fin

OFDA's Contributions to ETOP Activities

The online Pesticide Stock Management System (PSMS) that was developed with financial assistance from USAID/OFDA and other partners has been installed in some 65 countries around the globe and is helping participating countries maintain inventories. Thanks to this tool many counties have been able to avoid unnecessary procurements and

stockpiling of pesticides and helping them avoid costly disposal operations and improve safety and well-being of their citizens and shared environment.

The USAID/OFDA funded community-based armyworm monitoring, forecasting and early warning (CBAMFEW) project that was concluded last September has been incorporated in the annual work plan of the national crop protection departments in all participating countries <http://bit.ly/1C782Mk>. The project enabled farmers to detect and report AAW and prevent major crop/pasture damage. Participating countries continue expressing their gratitude for having the project implemented in their countries. USAID/OFDA/PSPM will maintain a line of communication with participating countries and monitor progresses. OFDA/PSPM is working with other partners to explore means and ways to expand this innovative technology to other AAW affected countries 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 improve safety of vulnerable populations and shared environment continued. It intends to expand this initiative to other parts of Africa, the Middle East, CAC, etc., as needed. OFDA continued its support for DRR programs to strengthen national and regional capacities for ETOP operations. The program which is implemented through FAO has assisted several frontline countries to mitigate, prevent, and respond to ETOP outbreaks. It has helped participating countries avoid from misuse and mishandling of pesticides, pesticide-incorporated materials and application platforms.

*USAID/OFDA has been sponsoring a project through the UN/FAO to help strengthen/re-build national and regional capacity to prevent and control the threats the locusts pose to the 25 million plus vulnerable people that eke a living from agriculture and livestock in CAC. The program is on track and it has enabled collaboration among neighboring countries where joint monitoring, surveillance, reporting and preventive interventions have been realized to minimize the threats of ETOPs to food security and livelihoods of vulnerable population. Through this project, several technical staff from **Sahel West Africa, Northwest Africa, Eastern and Northeastern Africa, CAC, and the Middle East** continue receiving training in several areas, including Health Safety and Environmental Monitoring as related to ETOP operations, PSMS management, etc. Assistance Completion Date for the project from the USAID/OFDA side will be 30 April, 2017.*

Note: ETOP SITREPs can be accessed on USAID Pest and Pesticide Management website: [USAID/OFDA PPM Website](#)

Weather and Ecological Conditions

Western Outbreak region: In **Morocco**, ecological conditions generally remained favorable for the SGR to survive and reproduce in southern and southeastern parts of the country. Light rain fell in central Sahara and heavier rain was recorded further north in Algeria during March. Green vegetation persisted in northern Mauritania, in wadis in Mali and in Tamesna plain in Niger as well as near irrigated field in Algeria. Light o no

rains were recorded in other countries in WOR (CNLA/Chad, CNLA/Mauritania, CNLAA/Morocco, CNLP/Mali, CNLA/Tunisia, NCLC/Libya, FAO-DLIS).

Central Outbreak Region: Good rains fell in spring breeding areas in the interior of Saudi Arabia and Yemen during March. Ecological conditions will improve in spring breeding areas in the interior of Saudi Arabia and Yemen where good rains fell in the Ramlat Sabatyn between Marib and Wadi Hadramaout, extending north to the Saudi Arabia border and the edge of the Empty Quarter. Vegetation dried out in winter breeding areas along most of the coastal plains on both sides of the Red Sea. Good rains fell on the southern Red Sea coast in Eritrea, in the railway area of eastern Ethiopia and the plateau between eastern Ethiopia and northern Somalia (DAF/Djibouti, DLCO-EA, DLMCC/Yemen, DLMO/Oman, FAO-DLIS, PPD/Eritrea, PPD/Sudan).

Eastern Outbreak Region: Good rains fell in spring breeding areas in the interior and southeastern **Iran** in February and March where ecological conditions continued improving and vegetation is green and further improve during the forecast period. The rest of ERO remained dry during March (FAO-DLIS).

NSE Outbreak Region: Rains continued near NSE outbreak areas and above normal rainfall was recorded in **Mozambique** (129 mm in Buzi plain, 140 mm in Gorongosa plain and 113 and 117 in Dimba plains) causing flooding, but unlikely it will affect locusts as eggs have hatched and hoppers can survive on partially submerged grasses. Heavy rains were also recorded in Wembere Plains (292.8 mm) and Malagarasi Basin (325), in **Tanzania** during March (IRLCO-CSA).

No update was received for CAC during March, however, ecological conditions are expected to have begun improving during the over the course of the forecast period allowing eggs to hatch and hoppers develop thereafter.

http://www.cpc.ncep.noaa.gov/products/international/casia/casia_hazard.pdf

Note: *Changes in the weather pattern and the rise in 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 normal ambient altitude due to warmer higher elevations.*

*The **Asian migratory locust**, an insect that bred just once a year, recently began exhibiting two generations per year. These anomalous manifestations and phenomena, which are largely attributed to the change in the weather pattern and associated ecological shift, are a serious concern to farmers, rangeland managers, crop protection experts, development and humanitarian partners and others. Regular monitoring, documenting and reporting anomalous manifestations in pest behavior and habitat remain critical to help avoid and minimize potential damages to crops, pasture and livestock and reduce subsequent negative impacts on food security and livelihoods of vulnerable populations and communities. **End note.***

Detailed Accounts of ETOP Situation and Forecast for the Next Six Weeks

SGR – Western Outbreak Region:

In **Mauritania**, overall the SGR situation remained generally calm throughout the country during the first dekad of March. Only a few low density mature and immature adults were detected by the survey team in the north and northwest of the country (in Dakhlet Nouadhibou, Adrar and Tiris Zemmour). Control operations were not necessitated during this dekad and the areas treated since the current campaign began in September, 2016 remained unchanged (17,472 ha)

In **Morocco**, preventive survey operations continued in south in Gueltat Zemmour-Boucraa-Smara-Oued Sakia ElHamra and detected immature and maturing solitary adults at densities ranging between 10 and 30 insects/ha on areas between 50 and 100 ha in size during the 3rd dekad of March. Survey operations continued in southern part of the country in the Oum Dreiga-Gueltat Zemmour-Smara-Oued areas Sakia El Hamra during the 2nd dekad and detected immature and maturing solitary adults with densities estimated between 1 to 25 adults/ha on areas measuring 20 to 90 hectares. During the 1st dekad of March, surveys detected immature solitary adults and mating adults with densities ranging from 5 to 1,500 insects/ha on areas measuring 40 to 90 ha in Smara-Oued Sakia El Hamra and control operation treated some 20 ha at Oued Sakia el Hamra (CNLAA/Morocco treated 522 ha since the current campaign began on October 22, 2016, end note).

Low numbers of adults were reported maturing in the central Western Sahara and isolated adults were present near

irrigated farms in the central Sahara of Algeria. However, overall the SGR situation remained calm in WOR. No locusts were reported in Chad, Libya, Mali, Niger or Tunisia during March (CNLA/Chad, CNLP/Mali, CNLAA/Morocco) (CNLA/Mauritania, CNLA/Libya, CNLA/Tunisia, FAO-DLIS).

Forecast: Given the continued decrease in local infestations in the surveyed areas and the progressive shrinking of areas favorable to the development of locusts on the other hand significant development is not expected during the coming dekads. As the temperature gradually rises in spring breeding areas, locusts will likely be detected in the southern side of the Atlas Mountains in **Morocco** and northern **Mauritania** and **Algeria** and begin breeding on a limited scale. Low number of adults will also likely persist in northern **Mali, Niger**, but significant developments are not likely during the forecast period (CNLA/Chad, CNLP/Mali, CNLAA/Morocco) (CNLA/Mauritania, CNLA/Libya, CNLA/Tunisia, FAO-DLIS).

SGR (Desert Locust) - Central

Outbreak Region: Survey operations were carried out on the coastal areas in Tehama and Gulf of Aden region between 18-22 March in **Yemen and** solitary scattered immature and mature adults were detected on the coastal areas in Tehama and Gulf of Aden during March. The situation in the northern part of Tehama in areas bordering Saudi Arabia remained unclear due to lack of access to the survey staff. No locusts were detected in **Saudi Arabia** where ground and aerial control operations treated more than 4,240 ha during February.

Scattered adults were present in southeast Egypt, but no locusts were reported in Djibouti, Eritrea, Ethiopia, Somalia or Oman during March. Syria, Iraq, Qatar, Kuwait, Bahrain and UAE are expected free of locusts during March (DAF/Djibouti, DLCO-EA, DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Eritrea, PPD/Sudan).

Forecast: Ecological conditions are likely to improve and cause breeding in areas of recent rainfall in the interior of **Saudi Arabia** and **Yemen** and increase locust numbers during the forecast period. Small-scale breeding may also occur in **Oman**, but significant developments are not likely in COR during the forecast period (DAF/Djibouti, DLCO-EA, DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Eritrea, PPD/Sudan).

SGR - Eastern Outbreak Region: The SGR situation in the EOR remained calm during March (DPPQS/India, FAO-DLIS).

Forecast: Good rains that fell in southeast Iran and southwest Pakistan the previous month will favor conditions for spring breeding however, significant developments are not likely in the 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): NSE remained a concern as favorable ecological conditions prevailed in most of the outbreak areas in Ikuu-Katavi, North and South Rukwa Valley plains and Malagarasi Basin; Lake Chilwa/Lake

Chiuta plains; Buzi-Gorongosa plain and Dimba plains in **Malawi, Mozambique, Tanzania** and **Zambia**. During aerial surveys conducted by IRLCO-CSA in **Zambia**, high density (50 insects/m²) hoppers of NSE mixed with *Cataloipus sp*, a grasshopper species, were reported spread over 10 000 ha of maize fields and pasture in the Kafue Flats. Aerial and ground control operations treated 5,500 ha during February/March with Fenitrothion 96%, Sumicombi Alpha and Malathion 40 EC (IRLCO-CSA).

Forecast: NSE will fledge during the forecast period and likely form swarms in the primary outbreak areas in IkuuKatavi, Malagarasi Basin, Wembere in Tanzania, Lake Chilwa/L. Chiuta in Malawi, Buzi-Gorongosa and Dimba plains in Mozambique. If left uncontrolled the swarms will leave their breeding areas and invade crop fields and pasture. Timely control interventions remain critical to abate any major threats this pest poses (IRLCO-CSA, OFDA-AELGA).

IRLCO-CSA, the only regional entity in the southern region with the mandate to survey, monitor, prevent and control locusts, armyworm and quelea birds, continues it requests to member-states to avail resources to carry out timely survey, monitoring and control operations. It is in the interest of all concerned that IRLCO-CSA member-states positively respond to the Organization's appeal for resources to prevent and control these pests successfully from ravaging crops and pasture (IRLCO-CSA, OFDA-AELGA).

Madagascar Migratory Locust (LMC): No update was received at the time this report was compiled. Moisture associated

with the cyclone will likely favor the development of locusts.

www.fao.org/emergencies/crisis/madagascar-locust/en/
<http://www.fao.org/emergencies/resources/videos/video-detail/en/c/430729/>

Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC): No update was received and no locust activities are expected in the CAC region during March.

Forecast: The Aral Sea region, where large-scale egg laying of LMI occurred during 2016, will likely experience massive hatching and hopper developments in spring 2017. Other breeding areas such as northern **Afghanistan** where undisturbed prolonged egg laying exploited the ongoing insecurity situation in the region will likely experience increased locust activities in 2017. Vigilance, mapping egg laying grounds remain essential to plan for the next campaign in 2017.

Note: Italian, Migratory and Moroccan locusts and some grasshopper species are a constant threat to the CAC region. They profusely multiply and attack tens of millions of hectares of crop and pasture and adversely affect food security and livelihoods of more than 20 million vulnerable inhabitants that eke out a living primarily from farming and herding. With the ability to travel more than 100 km (60 miles) each day, these locusts can decimate dozens of hectares of cereal crops, pasture, cotton, fruit trees, leguminous plants, sunflower, tobacco, vineyard, vegetable and others over vast areas. Many CAC countries affected by these locusts lack robust and well established capacity to effectively prevent

and control these pests, but do their level best and invest tremendous amounts of resources to keep these pests under control. USAID/OFDA has been supporting a DRR program to strengthen national and regional capacity to help abate these beasts (for further detail, refer to page 6, column two paragraph two). End note.

African Armyworm (AAW): AAW outbreaks were reported in Lindi (Kilwa district), Coastal (Bagamoyo, Charinze, Mukuranga and Kibaha districts), Morogoro (Umvumero, Kilombelo, Kilosa and Morogoro districts) and Tanga (Handeni, Lushoto and Muheza districts) regions in **Tanzania**. The pest was controlled by the affected farmers with material and technical assistance from MoAL. AAW outbreak was also reported in Kwale and Coast counties in **Kenya** where control operations were carried out by the affected farmers with technical assistance from the MoA. Elevated trap catches have been reported in southern **Ethiopia** in Gamugofa zone during March (DLCO-EA, IRLCO-CSA, PPD/Ethiopia).

Forecast: AAW outbreaks are likely to continue in northern **Tanzania**. With the AAW in the southern region winding down, it is unlikely that **Malawi, Mozambique, Zambia** and **Zimbabwe** will see any activities during the forecast period. AAW outbreaks may begin appearing in southern Ethiopia during the forecast period (Note: AAW forecasters that were trained by the USAID/OFDA sponsored CBAMFEW project continue requesting GOE to refurbish their pheromone traps and avail pheromones to continue their monitoring and forecasting activities (PPD/Ethiopia).

Where applicable, CABMFEW forecasters must remain vigilant and report any trap catches on time to concerned authorities to facilitate rapid interventions (DLCO-EA, IRLCO-CSA, OFDA/AELGA).

Fall armyworm (*Spodoptera frugiperda*) (SFR - FAW): SFR, a fast spreading, voracious multi-crop pest, that was previously reported causing damage to maize crops in dozens of countries across southern, southcentral, the greater lake and eastern Africa, including **Swaziland, Lesotho, South Africa, Botswana, DRC, Namibia, Zambia, Zimbabwe, Malawi, Mozambique, Uganda, Tanzania, Ghana**, has been reported in **Kenya** and **Ethiopia**.

As of the 1st week of March 2017, the pest has reached southern **Ethiopia** where it was first detected on irrigated maize fields in Sheka Zone Yeki Wereda in SNNPR of the country. It has since rapidly spread to 41 Weredas in 8 Zones in the SNNP Region and reached Shebe Wereda in Jima Zone in Ormomia Region and continues its journey. The pest was reported causing damage to maize crops and Enset plants (false banana, the roots of which are the main source of staple food for millions of people in SNNPR of Ethiopia).

Chemical and mechanical control operations were launched by MoA staff and affected farmers and treated more than 2,100 ha as of the 1st week of April (PPD/Ethiopia). With the northward trajectory of the inter-tropical front, the pest will continue spreading to the central and other parts of the country during the forecast period and threaten crops. In **Uganda**, AAW and FAW outbreaks were reported in twenty (20) districts across the Country and continued

spreading to others. The Ministry of Agriculture extension staff and affected farmers were spraying with insecticides (MoA/Uganda estimates a potential annually loss of some 450,000 MT of maize to unabated SFR (FAW) outbreaks (DLCO-EA, OCHA).

SFR continued attacking late planted maize crops in several parts of **Kenya**, in Muzuzu and Karonga Agricultural Development Divisions (ADD) in **Malawi** and in **Zimbabwe** (IRLCO-CSA).

Forecast: SFR will likely remain active in late planted or irrigated maize crops during the forecast period. However, it is not clear how this will develop, but regardless, affected countries must remain vigilant and maintain monitoring, surveillance and implement preventive interventions as needed and neighboring countries must remain on alert. All countries are strongly encouraged to share any information on SFR (FAW) sightings in their countries with neighboring countries.

It is to be recalled that in early 2016, SFR was detected in South-West Nigeria and neighboring Sao Tome and Principe, Benin and Togo. The pest was first reported attacking maize crops in the rainforest zones of south-western Nigeria and in maize fields of the International Institute of Tropical Agriculture in Ibadan and Ikenne in Nigeria (Georgen IITA, 2016)

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0165632>

While the cause for the sudden appearance of the FAW (a pest indigenous and well established and common in the Americas) is not clear. Some blame trade/transporting goods

across nations as a possible source. Others associate this phenomenon with climatological anomalies (strong wind, cyclones, storms, etc.) that can carry the moths a great distance, but the likelihood of wind carrying the pest across the ocean is not yet vetted. However, the moth, its eggs and larvae and even pupae can be carried around with planting materials, such as sods for turf building, through packaging, containers, etc. It may be possible that ongoing investigations and other similar efforts could throw some light on the route of introduction of this pest to the continent its presence was not known till now.

This species has a range extension of thousands of kilometers and a voracious appetite with close to 100 species of host plants to feed on, including plants in the grass family – maize, wheat, barley, sorghum, millets, sugar cane, and non-grass plants such as cowpea, potatoes, vegetables, cotton and many more threatening vast areas of agricultural fields in tropical Africa.

Its comparative evolutionary advantage of stronger serrated mandibles (jaws) enables it to munch on virtually any part of its host plant whether young or silicate old parts and can even cannibalize its own and other similar pests.

With these and the ability to continue breeding non-stop under favorable conditions, the FEW is in for the long haul in its new territory where known natural enemies to keep it in balance are unlikely or new natural enemies are yet to be detected.

This pest will likely take advantage of every means possible and dominate the indigenous armyworm species and

become a formidable pest with significant economic implications.

The larvae that may be susceptible to pesticides, develop and/or feed inside the maize stock, whorl, cobs or anywhere that “protects” from pesticides sprayed or other external threats, thus undermining effectiveness of pesticides. However, both young and late instar larvae are susceptible to other control tools (targeted use of both contact and perhaps trying systemic pesticides strategically, biopesticides and other biological control tools (note: experiences gained in the Americas - the pest’s origin, can be useful and worth exploring to the extent possible).

As a new pest to the continent, a lot needs to be done to ensure that this pest is well understood among communities in its potentially new home. Extensive studies are required to better understand its biological behavior, host preference, habitat selection, means and range of migration, competition between indigenous species, potential natural control tools and many more.

Awareness raising and training local communities, agricultural agents and other concerned entities is important for effective identification, detection surveillance, monitoring as well as to implement preventive control interventions.

As part of a long-term preventive and control alternative, resistance identification and selection would be important. Search and research for biological control tools such as natural enemies - parasitoids, predators, pathogens, is worth pursuing to help

develop an array of control tools in a tool box.

USAID/OFDA/PSPM will continue monitoring the situation and provide guidance and issue updates as often as necessary.

Note: PSPM continuous developing and improving AAW information in both the SOR and COR and so far, printable and web-based maps have been developed for AAW outbreak and invasion countries in the central and southern regions (click on the below link for the maps (OFDA/PSPM in collaboration with the GIU will develop a similar map for FAW):

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

*Locust outbreaks were reported in **Bolivia** during March, but details were not Available at the time this report was compiled.*

Quelea (QQU): QQU outbreaks were reported in Kilimanjaro, Mbeya (Mbalali) and Dodoma (Bahi) regions in **Tanzania** during March. Control was being undertaken in Mbeya region and plans to carry control in other areas were in progress. In **Zimbabwe**, QQU bird outbreak was reported in Gwanda district in Matebeleland South province and preparations were underway for control operations by MoA at the time this report was compiled. No QQU outbreaks reported in Malawi, Mozambique or Zambia at the time this update was compiled (DLCO-CE, IRLCO-CSA).

Forecast: QQU outbreaks are likely in **Kenya, Tanzania, Mozambique** and **Zimbabwe** as the rain-fed and irrigated

small grain cereal crops start becoming susceptible to QQU damage during the forecast period (IRLCO-CSA).

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 information was received on rodent situation during March. Serious rodent infestations were detected in **Georgia** in previous months where the pest was reported damaging vegetable crops (OFDA technical Adviser for pests and pesticides discussed this issue with colleagues from MoA/Georgia and provided them information on rodent biology, behavior, prevention and control.

(Note: 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 can transmit.)

All ETOP front-line line countries must maintain regular monitoring. Invasion countries should remain alert. DLCO-EA, IRLCO-CSA, DLCCs, DLMCC, CNLAs, national DPVs and PPDs, ELOs are encouraged to continue sharing ETOP information with stakeholders as often as possible 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 ETOP Prevention and Control

In March control operations treated 20 ha in **Morocco**.

Note: A Sustainable Pesticide Stewardship (SPS) can strengthen pesticide delivery system (PDS) at the national and regional levels. A strong PDS can effectively reduce pesticide related human health risks, minimize environmental pollution, increase food security and contribute to the national economy. An SPS can be effectively established by linking key stakeholders across political borders. **End Note.**

OFDA/PSPM encourages alternatives such as IPM to reduce risks associated with pesticide stockpiling. A judiciously executed triangulation of surplus stocks from countries with large inventories to countries in need is a win-win situation worth considering.

Table 3. ETOP Pesticide Inventory in Frontline Countries during March, 2016

Country	Quantity (l/kg)*
Algeria	1,188,847~
Chad	38,300
Egypt	68,070~ (18,300 ULV, 49,770 l)
Eritrea	17,124~ + 20,000 ^D
Ethiopia	9,681~
Libya	25,000~
Madagascar	206,000~ + 100,000 ^D
Mali	7,000
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	41,585 ^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 = <i>GreenMuscle</i> TM (fungal-based biological pesticide)	

LIST OF ACRONYMS

AAW	African armyworm (<i>Spodoptera expempta</i>)
AELGA	Assistance for Emergency Locust Grasshopper Abatement
AFCS	Armyworm Forecasting and Control Services, Tanzania
AfDB	African Development Bank
AME	<i>Anacridium melanorhodon</i> (Tree Locust)
APLC	Australian Plague Locust Commission
APLC	Australian Plague Locust Commission Bands groups of hoppers marching pretty much in the same direction
CAC	Central Asia and the Caucasus

CBAMFEW	Community-based armyworm monitoring, forecasting and early warning	GM	GreenMuscle® (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
DDLC	Department of Desert Locust Control	Hoppers	young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)
DLCO-EA	Desert Locust Control Organization for Eastern Africa	JTWC	Joint Typhoon Warning Center
DLMCC	Desert Locust Monitoring and Control Center, Yemen	Kg	Kilogram (~2.2 pound)
DMA	<i>Dociostaurus maroccanus</i> (Moroccan Locust)	L	Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)
DPPQS	Department of Plant Protection and Quarantine Services, India	LCC	Locust Control Center, Oman
DPV	Département Protection des Végétaux (Department of Plant Protection)	LMC	<i>Locusta migratoriacapito</i> (Malagasy locust)
ELO	EMPRES Liaison Officers -	LMM	<i>Locusta migratoria migratorioides</i> (African Migratory Locust)
EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases	LPA	<i>Locustana pardalina</i>
EOR	Eastern SGR Outbreak Region	MoAFSC	Ministry of Agriculture, Food Security and Cooperatives
ETOP	Emergency Transboundary Outbreak Pest	MoAI	Ministry of Agriculture and Irrigation
Fledgling	immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully developed reproductive organs to breed	MoARD	Ministry of Agriculture and Rural Development
		NALC	National Agency for Locust Control
		NCDLC	National Center for the Desert Locust Control, Libya
		NOAA (US)	National Oceanic and Aeronautic Administration
		NPS	National Park Services
		NSD	Republic of North Sudan

NSE *Nomadacris septemfasciata* (Red Locust)
 OFDA Office of U.S. Foreign Disaster Assistance
 PBB Pine Bark Beetle (*Dendroctonus* 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 Quelea* (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...

Who to contact for more information:

If you have any questions, comments or suggestions or know someone who would like to freely subscribe to this report or unsubscribe, please, contact:

Yeneneh Belayneh, PhD.
ybelayneh@usaid.gov
 Tel.: + 1-202-712-1859

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