

**Emergency Transboundary
Outbreak Pest (ETOP) Situation
Update for December, 2016 with a
Forecast till mid-February, 2017**
Un résumé en français est inclus

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹) situation gradually declined in December in the Western Outbreak Region (WOR) largely due to aggressive surveillance and control interventions by the national locust control units. Control operations treated close to 1360 ha in **Mauritania** and **Morocco** during this month.

In the Central Outbreak Region (COR), control operations treated close to 8,065 ha in **Eritrea**, **Sudan**, **Yemen** and **Saudi Arabia** combined and a few scattered mature adults, some copulating, were detected in the northwest coastal areas in **Somalia** during this period.

No Locusts were reported in the Eastern Outbreak Region (**EOR**) during December.

Forecast

Locusts will likely persist in **WOR** in northern **Mauritania** and southern **Morocco** and **Algeria** and adults will persist in **Niger**, but the situation will generally remain clam in other

countries in the region during the forecast period. In **COR**, breeding will likely continue and increase locust numbers along the Red Sea coasts. Small-scale breeding is also likely in northwest Somalia. **EOR** will remain calm and only a few adults may appear along southeastern Iran and southwestern Pakistan during the forecast period.

Active surveillance and timely preventive interventions remain critical to abate any threats to crops and pasture in areas where locust activities persist.

Red (Nomadic) Locust (NSE):

NSE continued developing in the southern outbreak region where hatching commenced and hopper bands started forming in **Zambia** and perhaps in the primary outbreak areas in **Tanzania**, **Malawi**, and **Mozambique** (IRLCO-CSA).

Forecast: Hatching will continue and form more hoppers and groups and perhaps swarms in the primary outbreak areas in **Tanzania**, **Malawi**, **Mozambique** during the forecast period (IRLCO-CSA).

Preventive interventions remain critical to avert any threats that the pest poses to food security and livelihoods of vulnerable populations.

Italian (CIT), Moroccan (DMA), Asian Migratory (LMI) Locusts: No locusts were reported in the Central Asia and the Caucasus (CAC) regions

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

and the situation will remain calm until next spring.

Tree locust (*Anacridium spp*):

Tree locust outbreaks were successfully controlled in Turkana County, **Kenya**.

African Armyworm (AAW): AAW outbreaks were reported in **Malawi** and **Zimbabwe** during December where control operations were carried out by the affected farmers with material assistance from the Ministries of Agriculture IRLCO-CSA).

Quelea (QQU): QQU outbreaks were reported attacking irrigated rice and sorghum in **Kenya**.

USAID/OFDA/PSPM monitors ETOPs closely through 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 des criquets pèlerins (*Schistoseca gregaria* - SGR) a diminué graduellement en décembre dans la Région de l'épidémie de l'Ouest (WOR), en grande partie grâce aux interventions agressives de surveillance et de lutte menées par les unités nationales de

lutte antiacridienne. Des opérations de contrôle ont été effectuées en Mauritanie et au Maroc pendant près de 1360 ha au cours de ce mois.

Dans la région de l'épidémie centrale, des opérations de contrôle ont été effectuées en Érythrée, au Soudan, au Yémen et en Arabie saoudite, près de 8 065 ha, et quelques-uns ont été détectés dans les zones côtières du nord-ouest de la Somalie pendant cette période.

Aucun Criquet pèlerin n'a été signalé dans la Région de l'Est (EOR) en décembre.

Prévoir

Les criquets persisteront vraisemblablement à WOR au nord de la Mauritanie et au sud du Maroc et de l'Algérie et les adultes persisteront au Niger, mais la situation restera généralement dans d'autres pays de la région pendant la période de prévision. Dans le COR, l'élevage va probablement continuer et augmenter le nombre de criquets le long des côtes de la mer Rouge. L'élevage à petite échelle est également probable dans le nord-ouest de la Somalie. EOR restera calme et seulement quelques adultes peuvent apparaître le long du sud-est de l'Iran et du sud-ouest du Pakistan pendant la période de prévision.

Une surveillance active et des interventions préventives opportunes demeurent essentielles pour réduire

les menaces qui pèsent sur les cultures et les pâturages dans les zones où les activités acridiennes persistent.

Rouge (nomade) Locust (NSE):

NSE a continué de se développer dans la région de l'épidémie méridionale où les éclosions ont commencé et les bandes larvaires ont commencé à se former en Zambie et peut-être dans les zones primaires de l'éclosion en Tanzanie, au Malawi et au Mozambique (IRLCO-CSA).

Prévisions: L'éclosion continuera et formera plus de trémies et d'essaims dans les zones de foyers primaires en Tanzanie, au Malawi, au Mozambique pendant la période de prévision (IRLCO-CSA).

Les interventions préventives restent essentielles pour éviter toute menace que l'organisme nuisible pose à la sécurité alimentaire et aux moyens de subsistance des populations vulnérables.

(CIT), Marocain (DMA), Migrations asiatiques (LMI):

Aucun Criquet pèlerin n'a été signalé dans les régions d'Asie centrale et du Caucase (CCA) et la situation restera calme jusqu'au printemps prochain.

Criquet arbers (Anacridium spp):

Les poussées de criquets d'arbres ont été contrôlées avec succès dans le comté de Turkana, au Kenya.

Cheille Légionnaire (AAW):

Cheille Légionnaire (AAW):

On a signalé des flambées d'AAW au Malawi et au Zimbabwe en décembre, où des opérations de lutte ont été menées par les agriculteurs affectés avec l'aide matérielle des ministères de l'agriculture (IRLCO-CSA).

Quelea (QQU): Des éclosions de QQI ont été signalées attaquant le riz irrigué et le sorgho au Kenya.

L'USAID / OFDA / PSPM surveille étroitement les ETOP par le biais de son réseau avec les PPD / DPV nationaux, les Unités de Lutte contre les Migrations et les organisations internationales et régionales, y compris la FAO, CLCPRO, CRC, DLCO-EA, IRLCO-CSA. Personnel, partenaires et autres aussi souvent que nécessaire. Résumé de fin

Une surveillance active et des interventions préventives opportunes demeurent essentielles pour réduire les menaces majeures dans les zones où les activités acridiennes sont présentes.

(CIT), Marocain (DMA), Migrations asiatiques (LMI):

La situation acridienne s'est terminée en Asie centrale et dans les régions du Caucase (CAC) et la situation restera calme jusqu'au printemps prochain.

USAID / OFDA / PSPM

surveille ETOPS de près grâce à son réseau avec PPDs / DPV, unités ravageurs migrants et les organisations internationales et régionales, y

compris la FAO, la CLCPRO, CRC, DLCO-EA, IRLCO-CSA. Il fournit des mises à jour en temps opportun et de conseils à l'AC, le personnel de terrain, les partenaires et les autres aussi souvent que nécessaire. Résumé 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.

OFDA/PSPM is working with partners to explore means and ways to expand community-based armyworm monitoring, forecasting and early warning initiative to benefit farmers and rural communities in other outbreak countries.

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.

OFDA continued supporting DRR programs to strengthen national and regional capacities for ETOP operations. The program is implemented through FAO

and has assisted several frontline countries to mitigate, prevent, and respond to ETOP outbreaks. It has helped minimize misuse and mishandling of pesticides, pesticide-incorporated materials and application platforms.

USAID/OFDA is sponsoring project activities through the UN/FAO to help strengthen/re-build national and regional capacity to prevent and control the threats the locusts pose to the tens of millions of vulnerable people that eke a living from agriculture and livestock in CAC.

The program is on track and it has enabled close collaboration among neighboring countries where joint monitoring, surveillance, reporting and preventive interventions continue minimizing the threats of ETOPs to food security and livelihoods of vulnerable populations. Through this project, technical staff from Sahel West Africa, Northwest Africa, Eastern and Northeastern Africa, the Middle East, Central Asia and the Caucasus continued receiving training in ETOP operations, including health and safety of vulnerable populations, monitoring environmental safety and many more.

Note: ETOP SITREPs can be accessed on USAID Pest and Pesticide Management website: USAID/OFDA PPM Website

Weather and Ecological Conditions

Western Outbreak region: During the first dekad of December, ecological conditions remained favorable in winter breeding areas in northwestern and western **Mauritania** and southern **Morocco** where light rain was reported.

Central Outbreak Region: Light rains fell in northern and southern Red Sea coastal areas in **Sudan, Eritrea,** northwestern **Somalia,** southeast **Egypt,** **Yemen** and **Saudi Arabia** in December. Vegetation was green and ecological conditions remained favorable in many places during this time.

Eastern Outbreak Region: The EOR remained mostly dry in December.

NSE Outbreak Region

During December, most locations near the NSE outbreak areas received significant amounts of rainfall: 312 mm in Kaliua, 188 mm in Muze and 114 in Masenge, Tanzania; 226.8 mm in Salima, 210 mm in Makoka, Malawi, 166 mm in Namwala, Zambia. Mafanbiza and Gorongoza in Mozambique recorded 77.5 and 75 mm respectively. As a result ecological conditions have become favorable in most of the NSE outbreak areas for locusts to breed and further develop (IRLCO-CSA).

In CAC, dry and cold weather prevailed in most of the locust breeding areas during this month.

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 **Pine Bark Beetle** has been escalating in the western hemisphere due to the rise in winter temperatures and decreased precipitation. Warmer weather means lesser egg/grub death from severe cold temperatures and less precipitation means weaker trees that succumb to the beetle attack.*

*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** the national locust unit continued intensive survey and control efforts and improved the locust situation. During December, CLNA controlled 1,167 ha bringing the total areas treated since September, 2016 to 17,036 ha. During the first dekad of September, 2016. In **Morocco**, two survey and control teams were mobilized to Dakhla-Oued Eddahab region in the southern part of the country

where control operations treated hoppers on 189 ha in several locations in Bir Guendouz zone. In **Niger**, immature and mature adults were detected in December in Tamesna Plain where small-scale breeding was reported in previous month. Immature and mature adults were also reported in irrigated areas in **Algeria** and a few adults were detected in northern **Senegal** presumably arrived from southern Mauritania. No locusts were reported in other countries in the region during this month (CNLA/Mauritania, CNLAA/Morocco, CNLA/Chad, CNLA/Tunisia, FAO-DLIS, NLLC/Libya).

Forecast: Small-scale breeding is likely in northern **Mauritania**, southern **Morocco**, in the Sahara region of Algeria during the forecast period, but overall major developments are not likely in the region (CNLA/Mauritania, CNLAA/Morocco, FAO-DLIS, NALC/Chad, NLCC/Libya, CNLA/Tunisia).

SGR (Desert Locust) - Central Outbreak Region: In **Sudan**, intensive survey operations were conducted in winter breeding areas in the Red Sea coast where mature gregarious groups from **Eritrea** arrived during the first dekad of December. Control operations treated 115 ha during this month. SGR continued developing in December in the Red sea coast in **Eritrea** where gregarious hoppers and immature adults were detected south of Shib. Ground survey and control operations were intensified and close to 7,200 ha were treated during December. A few scattered mature adults, some copulating, were detected in the north west coastal areas in **Somalia** during this month. In **Yemen**, SGR continued developing in Tehama coastal plains where various immature and mature adults and hoppers

were detected and control operations treated 120 ha during this month.



A farmer in the eastern part of Ethiopia trying to fend off a locust swarm with his shirt to protect his crop with no luck (file photo: FAO, 2014)

Scattered immature and mature adults and hoppers were detected along the Red Sea coasts in **Saudi Arabia** and egg laying adults were treated on 10 ha during this month. No locusts were reported in Djibouti, Ethiopia, or Oman during this month (DLCO-EA, DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Eritrea, PPD/Sudan).

Forecast: Breeding will likely continue and increase locust numbers along the Red Sea coasts and commence in northwest coast of **Somalia**, but other countries in the region will likely remain calm during the forecast period.

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

Forecast: The EOR will continue to remain calm during the forecast period.

Monitoring, preventive interventions and timely reporting are critical at all times to abate any major developments that could

threaten crops and pasture in areas where locust activities are present.

Red (Nomadic) Locust (NSE): NSE continued developing in the southern outbreak region. Reports from the Kafue Flats in **Zambia** indicate hatching and 1st and 2nd instar hopper bands started forming. A similar situation is likely in Malagarasi Basin and Ikuu-Katavi plains in **Tanzania**, Lake Chilwa/Lake Chiuta plains and Mpatsanjoka Dambo in **Malawi**, and Buzi-Gorongosa and Dimba plains in **Mozambique** where large parental populations were present before the onset of the breeding season.

Forecast: Hatching that has already commenced in the Kafue Flats of Zambia and likely started in the outbreak areas in Malawi, Mozambique and Tanzania will further develop and form yield more hoppers and bands in the Malagarasi Basin and Ikuu-Katavi plains in Tanzania; Lake Chilwa/Lake Chiuta plains and Mpatsanjoka Dambo in Malawi; Buzi-Gorongosa and Dimba plains in Mozambique during the forecast period. If left uncontrolled, hoppers will fledge form adults during March/April 2017 and form swarms thereafter (IRLCO-CSA, OFDA/PSPM).

It is important that timely surveillance, monitoring and control operations are launched against hoppers in February and March and prevent fledglings from appearing thereafter which can otherwise make the situation more complicated to abate them as they will form adult swarms and begin flying around and easily reach cropping and grazing areas and threaten food security of vulnerable populations.

IRLCO-CSA, the only entity in the southern region with the mandate to survey, monitor, prevent and control locusts, armyworm and quelea birds, continues appealing to its member-states to avail resources to carry out timely surveys, monitoring and control operations and contribute to food security and livelihoods of vulnerable populations in the region that has already been battered by multiple calamities. It is in the interest of all concerned that IRLCO-CSA's member-states positively and generously respond to the Organization's please for resources and enable it to abate, prevent and control these pests successfully and prevent them from reaching a plague stage and ravage crops and pasture and end up being unstoppable (IRLCO-CSA, OFDA-AELGA).

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

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): Locust activities have concluded in the CAC region.

Forecast: No locust activities are expected during the forecast period in CAC.

Note: Italian, Migratory and Moroccan locusts and some grasshopper species are a constant threat to the CAC region. They multiply profusely 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.



CAC countries affected by CIT, DMA and LMI species (source: FAO-ECLLO).

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 crops 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.

Timor and South Pacific: No update was received from East Timor during this month, but it is likely that ETOPs continued to be present.

African Armyworm (AAW): In **Malawi** sporadic outbreaks occurred in Kasungu, Machinga, Shire Valley and Blantyre

Agricultural Development Divisions (ADDs) during December where control operations were carried out by the affected farmers with material assistance from the Ministry of Agriculture. In **Zimbabwe**, outbreaks were reported in the Nyamaropa area north of Manicaland province and considerable numbers of trap catches were also reported in Mashonaland Central province where MinAgri is closely monitoring the situation (IRLCO-CSA).

Forecast: AAW outbreaks are likely to continue in **Malawi** and **Zimbabwe** and appear in other countries in the region during the forecast period and will gradually decline towards the end of the outlook period.

Note: OFDA/PSPM continued developing and improving AAW information in both the SOR and COR. So far, printable and web-based maps have been developed for AAW outbreak and invasion countries in the central and southern regions (click here for the SOR maps):

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

The **Fall Armyworm**, *Spodoptera frugiperda* (SFR), a close relative of AAW was reported causing damage to maize crop in **Zambia** and **Zimbabwe** where, according to IRLCO-CSA, thousands of hectares were affected and the Ministries of Agriculture distributed pesticides to affected farmers. In **Malawi**, the Ministry of Agriculture was investigating a similar attack.

Forecast: The SFR is likely to continue appearing and attack maize and cause

damage kernels during seed developments occur (IRLCO-CSA).

Quelea (QQU): QQU outbreaks were reported in Busia, Siaya, Kisumu Makueni and Counties in **Kenya**, where irrigated rice and sorghum crops were affected. Assessments were launched by the Ministry of Agriculture to determine appropriate control interventions (DLCO-EA, IRLCO-CSA).

Forecast: QQU outbreaks will likely continue in Kenya, but the pest is not expected to cause problems in other outbreak countries (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: Serious rodent infestations were reported in **Georgia** where the pest was seen damaging serial and vegetable crops (OFDA technical Adviser for pests and pesticides discussed this issue with colleagues from MoA/Georgia and provided information on rodent biology, behavior, prevention and control strategies).

(Note: On average an adult rat can consume 3-5 gm of food (grains etc.)/day and a populations 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 and making it unfit for human

consumption) and to 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 December, control operations treated 1,167 ha in **Mauritania**, 189 ha in **Morocco**, 7,818 ha in **Eritrea**, 115 ha in **Sudan** and 120 ha in **Yemen** and 10 ha in **Saudi Arabia**.

Note: SGR invasions countries where large inventories of obsolete stocks, some dating as far back as 2003-05 locust campaign and even earlier than and those that inherited from Soviet era, must secure that these stocks are kept in safe places until they are properly disposed. Safe disposal of these stocks requires considerable amount of resources, but significantly minimizes health risks and environmental pollution.
End note.

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	9,582~ + 20,000 ^D
Ethiopia	9,681~
Libya	25,000~
Madagascar	206,000~ + 100,000 ^D
Mali	7,000
Mauritania	14,477 ^{DM}
Morocco	3,490,689 ^D
Niger	75,750~
Oman	10,000~
S. Arabia	93,590~
Senegal	156,000~
Sudan	169,865~
Tunisia	68,514 obsolete
Yemen	41,465 ^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	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
CERF	Central Emergency Response Fund
CIT	<i>Calliptamus italicus</i> (Italian Locust)
CLCPRO	Commission de Lutte Contre le Criquet Pélerin dans la Région Occidentale (Commission for the Desert Locust Control in the Western Region)
CNLA(A)	Centre National de Lutte Antiacridienne (National Locust Control Center)
COR	Central SGR Outbreak Region
CPD	Crop Protection Division
CRC	Commission for Controlling Desert Locust in the Central Region
CTE	<i>Chortoicetes terminifera</i> (Australian plague locust)

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
GM	GreenMuscle® (a fungal-based biopesticide)	NALC	National Agency for Locust Control
ha	hectare (= 10,000 sq. meters, about 2.471 acres)	NCDLC	National Center for the Desert Locust Control, Libya
ICAPC	IGAD's Climate Prediction and Application Center	NOAA (US)	National Oceanic and Aeronautic Administration
IGAD	Intergovernmental Authority on Development (Horn of Africa)	NPS	National Park Services
IRIN	Integrated Regional Information Networks	NSD	Republic of North Sudan
IRLCO-CSA	International Red Locust Control Organization for Central and Southern Africa	NSE	<i>Nomadacris septemfasciata</i> (Red Locust)
ITCZ	Inter-Tropical Convergence Zone	OFDA	Office of U.S. Foreign Disaster Assistance
ITF	Inter-Tropical Convergence Front = ITCZ)	PBB	Pine Bark Beetle (<i>Dendroctonus</i> sp. – true weevils)
FAO-DLIS	Food and Agriculture Organizations' Desert Locust Information Service	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 Quelea</i> (Red Billed <i>Quelea</i> bird)
		SARCOF	Southern Africa Region Climate Outlook Forum

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...

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