

**Emergency Transboundary Outbreak
Pest (ETOP) Situation Report for
March with a Forecast till
Mid-May, 2014**

Summary

The Desert Locust (SGR¹) situation improved in winter breeding areas along the Red Sea coasts during March. Control operations treated hoppers and adult groups on less than 28,120 ha in **Saudi Arabia, Sudan, Eritrea** and **Yemen** combined during this month (DLCO-EA², DLMCC/Yemen, FAO-DLIS).

Several small immature swarms from southwestern **Somaliland** invaded eastern **Ethiopia** along the border with **Djibouti** and aerial and ground control operations were carried out on some 190 ha. A few immature adults were reported in **Oman**, but other countries in the region remained calm during this month (DLCO-EA, DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Sudan).

No locusts were reported in **Morocco, Tunisia, Mauritania, Mali, Niger, Libya** or **Chad** and a few hoppers were treated near irrigated areas in **Algeria** during this month. A few scattered adults were reported in southeastern **Iran**, but no locusts were reported in adjacent areas in southwestern **Pakistan** or in **India** during this period (CNLA/Mauritania, CNLA/Tunisia, CNLAA/Morocco, DPPQS/India, FAO-DLIS, NCLC/Libya, LCC/Oman).

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

² DLCO-EA member-countries = Djibouti, Eritrea, Ethiopia, Kenya, Somalia, Sudan, South Sudan, Tanzania, Uganda,

Forecast: Locust infestations are expected to further decline along the Red Sea coasts and the Gulf of Aden. Adult groups and swarms will likely form on the coastal areas in Saudi and move east into spring breeding areas in the country. Locust numbers will slightly increase in the Nile valley in **Sudan** and perhaps eastern **Ethiopia**. Low numbers of adults may appear in spring breeding areas in southeastern **Morocco**, western **Algeria** and southern **Libya** and begin breeding during the forecast period. Southeast **Iran** and western **Pakistan** will experience limited-scale breeding during the forecast period (CNLA/Mauritania, CNLAA/Morocco CNLA/Tunisia, CRC, DLCO-EA, DLMCC/Yemen, DPPQS/India, FAO-DLIS, INPV/Algeria, LCC/Oman, NCLC/Libya, PPD/Sudan).

OTHER ETOPS

Red (Nomadic) Locust (NSE): NSE situation remained serious in **Malawi** and a similar situation is expected in **Tanzania** and **Mozambique** where favorable breeding conditions persisted (IRLCO-CSA, OFDA/AELGA).

Forecast: Adults will concentrate and form swarms. If left uncontrolled, the swarms will begin migrating to neighboring areas.

The International Red Locust Control Organizations for Central and Southern Africa (IRLCO-CSA) has appealed to member-states and development partners for resources to launch timely survey and control operations and abate potential damage to crops and pasture.

Madagascar Migratory Locust (LMC): Large numbers of hoppers have fledged

and formed adult populations. As of March 20, more than 20 million ha have been reported surveyed and more than 400,000 ha have been treated or protected. The current infestation areas stretch over vast areas, some 100 km from south-west of Mahajanga to the southern part of the Mahafaly Plateau (south of Toliara) (DPV-FAO, FAO-ECLO).

Forecast: As the rainy season comes to an end and the wind patterns change, the coastal areas will progressively dry out forcing second generation swarms move towards the interior of the country.

Aggressive surveillance, monitoring and timely preventive interventions remain imperative to avert any major crop damage in the coming months (DPV-FAO, OFDA/AELGA).

Moroccan (DMA), Italian (CIT), Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC): No locust activities were reported in CAC in March (OFDA/AELGA).

Forecast: Locust activities are expected to appear and increase in CAC during the forecast period (FAO-ECLO, OFDA/AELGA).

Tree locusts: Tree Locust outbreaks persisted in Turkana Kenya (IRLCO-CSA).

African Armyworm (AAW): AAW outbreaks occurred in Kilifi, Taita Taveta and Kwale counties in **Kenya** and in Arusha, Mtwara and Mbeya regions in Tanzania (IRLCO-CSA, PHS/Tanzania).

Forecast: AAW situation will likely subside in Malawi, Mozambique, Zambia and Zimbabwe and outbreaks will likely continue in northern **Tanzania** and **Kenya** and perhaps begin

appearing in southern **Ethiopia** towards the end of the forecast period (IRLCO-CSA, DLCO-EA, OFDA/AELGA, PHS/Tanzania).

Quelea (QQU): QQU bird outbreaks were reported from Kilimanjalo and Shinyanga regions in **Tanzania** and in Makueni County in **Kenya**. QQU populations were reported in Chokwe district in Gaza province in **Mozambique** (DLCO-EA, IRLCO-CSA).

Forecast: QQU birds will likely continue being a problem to small grain cereals in **Kenya** and **Tanzania** and **Zimbabwe** (IRLCO-CSA).

OFDA/TAG, through its Pest and Pesticide Monitoring, Reporting and Response unit (Assistance for Emergency Pest [Locust/Grasshopper] Abatement) will continue monitoring ETOP situations closely and issue alerts and monthly updates and advise as necessary. **End summary**

Progresses made in SGR Frontline Countries:

SGR frontline countries (FCs) in Sahel West Africa, namely **Chad, Mali, Mauritania**, and **Niger** have established autonomous national locust control units (CNLA) responsible for all SGR activities.

With the support they received from external sources, including USAID/OFDA and their own resources, FCs are often able to launch preventive interventions and minimize and avoid the threats the SGR poses to food security and livelihoods of vulnerable communities. Preventive interventions that Mauritania launched from October 2013 through January 2014, with its own resources,

and abated threatening locust invasions is a good example of a success story.

CNLAs' continued efforts *to prevent, mitigate, avert and/or respond to potentially devastating SGR outbreaks and invasions* are good examples of **disaster risk reduction** that *deserve encouragements and support.*

OFDA ETOP Activities and Impacts

- Contributions from OFDA and other donors enabled FAO to establish Pesticide Stock Management System (PSMS) in 50 countries around the globe. As a result, participating countries can now conduct regular inventories and make informed decisions to prevent unnecessary accumulations of obsolete stocks, avoid costly disposal operations, ensure safety of their citizens and protect their shared environment.
- OFDA-sponsored, three year program on scaling up community-based armyworm monitoring, forecasting and early warning which was launched in FY 2013 is progressing well. The program aims at reducing the risk of armyworm threats to food security and livelihoods of rural communities and vulnerable populations. Activities are being coordinated by the DLCO-EA in collaboration with partners in Ethiopia, Kenya and Tanzania. Among partners' latest achievement is successful launching of a mobile based information collection and transmission by local farmers.
- OFDA continues its assistance to sustainable pesticide risk reduction

initiatives through stewardship network (SPRRSN) programs by strengthening capacities of host-countries and partners to ensure safety of vulnerable populations and protect their assets and the shared environment against pesticide contamination. OFDA/TAG has successfully launched two sub-regional SPRRSNs in Eastern Africa and the Horn. The Horn of Africa SPRRSN initiative has created a "model" Association dubbed as Pesticide Stewardship Association-Ethiopia (PSA-E) which is viewed as a boiler plate for future initiatives. OFDA is considering expanding the SPRRSN initiatives to North Africa, West Africa, the Middle East, CAC and other regions.

- OFDA continued its assistance for capacity strengthening as part of its DRR programs through a cooperative agreement with FAO to mitigate, prevent, and respond to and reduce the risk of ETOP emergencies and avoid misuse and mishandling of pesticides, pesticide-incorporated materials and application platforms in the western, central and eastern regions.
- OFDA supported DRR program aimed at strengthening national and regional capacities for ETOP operations in Central Asia and the Caucasus (CAC) is in progress. The program focuses on improving national and regional capacities to better coordinate locust monitoring and reporting as well as joint plans for survey and prevention to minimize the threats they pose to food security and livelihoods of vulnerable populations.

Note: All ETOP SITREPs, including the current one can be accessed on our websites:

<http://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>

Detailed accounts of weather and ETOP situation and forecast for the next six weeks are discussed hereafter.

Weather and ecological conditions

Ecological conditions are favorable in a few locations for the survival and reproduction of locusts at the southeastern slopes in the valley of Ziz-Ghris and south of the Oriental.

Heavy to moderate rain was recorded in **Oman** where low pressures persisted on 13th to 14th and 26th to 27th March: 97 mm in Ibri (2313N5630E), in Dhahera Region; 95 mm in al Hamra (2309N5712E), in Dakhiliya Region; 85 mm in Musana (2347N5739E), in South Battinah Region; 48 mm in Sinaynah (2336N5556E), 48mm, in Bureimi Region. Vegetation conditions were green with medium density and wet soil moisture. Light to moderate rains were reported in **Yemen** on March 15th and 18th (DLMCC/Yemen).

Most **NSE** outbreak areas reported good rain. In central **Mozambique**, flooding occurred in low lying areas of Buzi-Gorongosa plains. In Tanzania, good rains continued in the NSE outbreak areas, 297.4 mm was recorded in Kailua near the Malagarasi Basin. In Ntaja, Malawi more than 345 mm was recorded during March (IRLCO-CSA).

Ecological conditions are expected to have begun improving gradually in **CAC** for locust activities to commence (OFDA/AELGA).

In **Madagascar**, optimum rainfall for the Malagasy locust continued in the invasion and outbreak areas (DPV-FAO).

Note: Changes in the weather patterns contribute to ecological shift in ETOP habitats and can increase the risk of pest outbreaks, resurgence and even emergence of new pests. Regular monitoring and reporting of anomalous manifestations in habitats and pest situation remain essential. **End note.**

DETAILED ACCOUNTS OF ETOP SITUATION AND FORECASTS FOR THE NEXT SIX WEEKS

SGR - Western Outbreak Region: The SGR situation remained calm in winter breeding areas in the western outbreak region during March. Only a few hoppers were treated near irrigated crops in central **Algeria** during March. No locusts were reported in **Morocco, Tunisia, Mauritania, Mali, Niger, Libya** or **Chad** during this month

Forecast: The locust situation will likely remain calm in the region and only some adults will likely appear in spring breeding areas in southeastern **Morocco**, western **Algeria** and southwestern **Libya** and perhaps begin breeding during the forecast period, but significant developments are not likely (CNLA/Mauritania, CNLAA/Morocco, FAO-DLIS, NCDLC/Libya).

SGR (Desert Locust) - Central Outbreak Region: During March, several small immature swarms from the plateau in northwest Somalia near Boroma continued southwesterly migration and reached northwestern Jijiga, eastern **Ethiopia** along the border with Djibouti. The swarms originated on the northwest coastal plains of **Somalia** from an outbreak that resulted from the good rains that fell during the past months in the Garisa-Lughaye area between Sillil and Berbera. Limited control operations were launched in **Somalia** during the previous month, but escapee swarms migrated westward and reached Geladin and Boh districts of Warder Zone and Degehabur in eastern Ethiopia. The swarms are highly mobile and difficult to control. So far, two immature

swarms, in Ayasha (1046N/4234E) and another in Aws Shubye (0914N/4309E), northeast of Jijiga were controlled on 190 ha total on March 23rd.



(A swarms over Hargeisa, Somalia, march 28, 2014, FAO-DLIS)

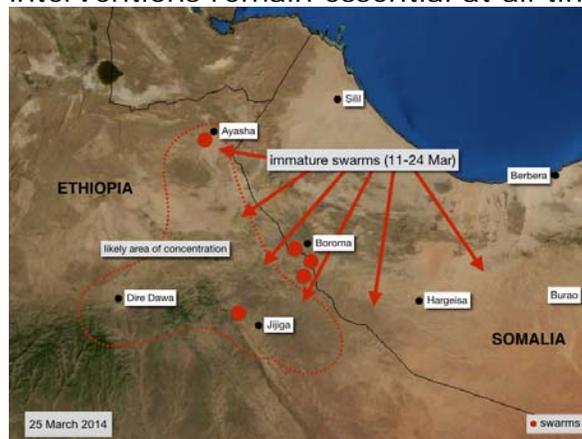
A DLCO-EA spray aircraft is on standby in Dire Dawa, eastern Ethiopia and national ground control teams are dispatched.

In **Yemen**, infestations declined in winter breeding areas along the Red Sea coasts and Gulf of Aden areas where aggressive control operations and deteriorating ecological conditions. Ground surveys were limited to the northern part of Tihama between Al Zuhrah and Midi during the first week of March. Ground control treated hoppers and fledglings in one location (1559N/4254E) west of Suq Abs (1600N/4312E) on 4 ha on 26 March.

During March, low density immature adult locusts were reported in Dhahera and Bureimi Regions and unconfirmed reports also indicated the presence of locusts between Adam, Dakhiliya Region and Sinaw, North Sharqiya Region and in Wadi Rifash (2300N5630E) in **Oman**. The locust situation improved in Southern Tihama in **Saudi Arabia** in March. Hopper bands were reported in the central coast and egg-laying occurred on the northern coast and control operations treated some 23,277 ha during this month. In **Sudan** 4.669 ha were treated during March.

Forecast: The prevailing winds are expected to concentrate the swarms on the plateau near Jijiga, in adjacent areas of the Harar Highlands, and along the railway area between Dire Dawa and Ayasha. Given that the immature swarms

are highly mobile and are in rough terrain inaccessible by ground survey teams, it is likely that they will escape detection, mature and breed and become a problem. Vigilance, routine survey and timely reporting and preventive interventions remain essential at all times.



SGR situation during the last week of March, 2014, source: FAO-DLIS)

Small scale breeding will occurred during the forecast period in Dhahera and Bureimi Regions. Hoppers will fledge in beginning of April causing an increasing number of adult groups. Intensive surveys are required in all the Desert Locust breeding areas (DLCO-EA, DLMCC/Yemen, FAO-DLIS, PPD/Oman, PPD/Sudan).

Vigilance and active monitoring, reporting and preventive interventions remain essential to abate locust migration to neighboring countries (CRC, DLCO-EA, DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Sudan).

SGR - Eastern Outbreak Region: During the second dekad of March the presence of low density mature solitary adults were reported in Qaleganj, Kerman Province in Iran. No locusts were reported in **Pakistan** or **India** during this period (DPPQS/India, FAO-DLIS, PPD/Oman).

Forecast: Small-scale breeding is likely in areas of recent rainfall in southeast **Iran** and western **Pakistan** and cause locust numbers to increase slightly, but significant developments are not expected in the region

during the forecast period (DPPQS/India, FAO-DLIS)

Red (Nomadic) Locust (NSE): NSE situation continued being serious in the outbreak areas in Tanzania, Malawi and Mozambique. Suitable breeding conditions in Ikuu-Katavi plains, Wembere plains and Malagarasi Basin in Tanzania; Lake Chilwa/ Lake Chiuta plains in Malawi; Buzi-Gorongosa and Dimba plains in Mozambique allowed NSE to successfully form hopper groups, bands and fledglings in those areas (IRLCO-CSA, OFDA/AELGA).

Forecast: During the forecast period, grass burning will cause locusts to concentrate and form swarms which will then migrate from the breeding areas and invade other areas. FAO Office in **Malawi** is providing resources for surveillance and control in Lake Chilwa/Lake Chiuta plains.

IRLCO-CSA has issued an alert and appealed to its member-states (IRLCO-CSA³) and development partners to avail resources to maintain aggressive and timely survey, monitoring and coordinated control operations in Tanzania (Ikuu-Katavi, Malagarasi Basin, Wembere and Rukwa Valley), Mozambique (Buzi-Gorongosa and Dimba plains) and Zambia (Kafue Flats). to avert any serious damage the pest could cause to crops and pasture and impact food security in the affected regions down the line.

Madagascar Migratory Locust (LMC)

The second generation breeding that started during the first half of January 2014 is almost complete, hoppers have fledged and more adult populations are appearing. Infested areas stretch from Soalala area, about 100 km (60 miles) south-west of Mahajanga to the southern part of the Mahafaly Plateau (south of Toliara). In the outbreak area, late instar

hopper bands as well as young adults and swarms are present along a coastal area of less than 100 km width. In the invasion area, hopper bands and swarms are present in the Middle-West while young hopper bands are reported from the Soalala area.

Survey and control: More than 20 million ha have been surveyed and more than 400,000 ha treated or protected as of March 20th since aerial operations began in late September 2013.

Resources: Of the \$43.9 million appealed for, \$26.2 has been received from GoM (through a Work Bank loan), Austria, Belgium, CERF-OCHA, European Union, France, Italy, Norway, and USA.

Three helicopters have been deployed along the central, mid and north western parts of the country to canvas large areas of invasion. The fixed-wing spraying aircraft, was added on March 1st in Tsiroanomandidy (in the Middle-West) to cover remote areas inaccessible by the helicopters. Vehicles, camping, survey and personal protective equipment, etc. have been (and continue to be) delivered. Key technical specialists, including a Campaign Coordinator, two Junior Locust Experts, one Junior Logistician, one Logistics and Security Expert, a Geographical Information Systems Expert, two Aircraft Logistics Experts, a Bio-pesticide expert and an Environmentalist Expert are on site to organize field activities and train national staff. [Human Health and Environmental Management Plan](#) is being implemented in close collaboration with the National Anti-Locust Centre, the Plant Protection Directorate of the Ministry of Agriculture and the National Coordination Unit, and national specialized expertise has been mobilized.

Pesticides: Close to half of the conventional pesticide required for the first phase of the locust control campaign: 260,000 l has been received from the Governments of Algeria

³ IRLCO-CSA member-countries = Botswana, Kenya, Malawi, Mozambique, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe

(30,000 I, will arrive soon), Mauritania (30,000 I) and Morocco (200,000 I). Donations from Morocco and Mauritania have been delivered from October to February. The stock donated by Algeria is expected to arrive by mid-April 2014 (DPV-FAO).

Forecast: As the rainy season progressively comes to an end and the wind pattern is changing, the coastal areas will progressively dry out. As a result, swarms that are formed from the second generation will be highly mobile and move towards the interior of the country.

Aggressive surveillance, monitoring and timely preventive interventions remain imperative to avert any major crop damage in the coming months, all the more so in the West Central Invasion areas, North Central multiplication and Concentration areas (DPV-FAO, OFDA/AELGA).

The latest locust information from FAO-DPV/Madagascar is available on:

<http://www.fao.org/emergencies/results/en/?keywords=Madagascar%20locust%20crisis>

Moroccan (DMA), Italian (CIT), Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC): No locusts were reported in CAC during this period (OFDA/AELGA).



(Locust prone CAC countries, FAO)

Forecast: Locust activities are expected to commence in CAC during the forecast period (FAO-ECLO, OFDA/AELGA).

Tree locusts: Monitoring continued on Tree Locusts in Turkana County in Kenya, but no infestations were reported during March (OFDA/AELGA).

Timor and South Pacific: No update was received from E. Timor in March (OFDA/AELGA).

African Armyworm (AAW): AAW outbreaks occurred in Kilifi, Taita Taveta and Kwale counties in **Kenya** and in Arusha, Mtwara and Mbeya regions in **Tanzania** (IRLCO-CSA, PHS/Tanzania).

Forecast: AAW situation will likely subside in Malawi, Mozambique, Zambia and Zimbabwe and outbreaks will likely continue in northern **Tanzania** and **Kenya** and perhaps begin appearing in southern **Ethiopia** towards the end of the forecast period (IRLCO-CSA, DLCO-EA, OFDA/AELGA, PHS/Tanzania).

Quelea (QQU): QQU bird outbreaks were reported from Kilimanjalo and Shinyanga regions in **Tanzania** and in Makueni County in **Kenya**. QQU populations were reported in Chokwe district in Gaza province in **Mozambique** (DLCO-EA, IRLCO-CSA).



QQU roosts in Kitui, Kenya in February (Courtesy: Daily Nation Kenya, March, 2014)

Forecast: QQU birds will likely continue being a problem to small grain cereals in

Kenya and Tanzania and Zimbabwe (IRLCO-CSA).

Facts: *QQU birds can travel ~ 100 km/day looking for food. An adult QQQU bird can consume 3-5 g of grain and perhaps destroy the same amount each day. A QQQU colony can contain up to a million or more birds (very common) and is capable of consuming and destroying 6,000 to 10,000 kg of seeds/day, enough to feed 12,000-20,000 people for a day.*

Rodents: No reports of rodent outbreaks were received during March. However, rodents remain a constant threat to cereal and other crops and produces in many outbreak and invasion areas and require regular surveillance and preventive interventions (OFDA/AELGA).

Front-line countries are advised to remain vigilant and invasion countries are cautioned to maintain regular monitoring. DLCO-EA, IRLCO-CSA, national PPDs, CNLAs, DPVs, ELOs, and others are encouraged to continue sharing ETOP information from the field with partners and stakeholders as often as available. Lead farmers and community forecasters are encouraged to remain vigilance and report any ETOP sightings to field agents and concerned authorities immediately.

Inventories of National Stocks of Acridid Pesticides

Pesticide inventory showed a minor change in March as few countries were engaged in limited control operations: Eritrea (160 ha) Sudan (4,669 ha), Yemen (4), Saudi Arabia (23,277 ha), Ethiopia (190 ha). No changes were reported in other countries during the reporting month.

Note: Some of the inventories shown below are not necessarily current, as many countries tend to their inventories after activities are concluded and/or use acridid pesticides for controlling other agricultural pests. **End note.**

Mindful of the risk of pesticides becoming obsolete passed their use of life and posing serious health and environmental threats and become considerable financial burdens, ETOP countries with large inventories and less likely to use them within a reasonable time period, are encouraged to test their stocks regularly and determine whether they should use, retain, share or safely discard them.

With the support from USAID/OFDA, Japan, the Netherlands and other donors, FAO has been able to install a web-based tracking system – Pesticide Stock Management System (PSMS) - in more than 50 countries around the globe. The System has enabled dozens of countries to identify stocks that require testing, or put to an immediate use, or shared or promptly disposed.

OFDA/AELGA encourages countries to continue exploring options that are proven safe and effective in preventing the risks pesticide stockpiling could pose to vulnerable populations and communities, their shared environment and assets as well as beneficial organisms and to minimize and ultimately avoid financial burdens associated with disposal of obsolete pesticide stocks. It promotes IPM at all times. A judiciously executed triangulation of usable stocks from countries with large inventories to where they are much needed is a win-win situation worth considering.

Note: *The core message of sustainable Pesticide Stewardship Program is to strengthen the national and regional pesticide delivery systems by linking partners at different levels to help reduce pesticide related health risks as well as minimize and prevent environmental pollution, and thereby improve food security and ultimately contribute to the national and regional economy. **End note.***

Estimated Quantities of pesticides available for ETOP operations in frontline countries as of November, 2013

Country	Quantities I/kg [§]
Algeria	1,190,000~ ^D
Chad	43,400
Eritrea	-9,780~
Egypt	Data not available
Ethiopia	1,410~
Libya	25,000
Madagascar	176,580~
Mali	32,000 ^D
Mauritania	49,000 ^D
Morocco	3,757,000~ ^D
Niger	42,805~
Oman	20,000
Senegal	156,000~ ^D
Saudi Arabia	Data not available
Sudan	801,000~
Tunisia	36,575~
Yemen	22,000@ + 300 kg GM~

[§]Include different kinds of pesticides in ULV, EC and dust formulations
~ data not current

^D = Morocco, Senegal, Mauritania and Algeria donated/pledged 200,000 I, 30,000 I, and 30,000 I of pesticides to Madagascar in 2013; Mali donated 21,000 I for NSE in Malawi, Mozambique and Tanzania in 2012 and FAO facilitated the triangulation process and received 32,000 I from Morocco;

Mauritania donated 25,000 and 30,000 I of pesticides to Libya in 2012 and Madagascar 2013

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

@includes donations from Saudi Arabia

LIST OF ACRONYMS

AAW African armyworm (*Spodoptera expempta* - SEX)
AELGA Assistance for Emergency Locust Grasshopper Abatement

AFCS Armyworm Forecasting and Control Services, Tanzania
AfDB African Development Bank
AME *Anacridium melanorhodon*
APLC Australian Plague Locust Commission
APLC Australian Plague Locust Commission
CAC Central Asia and the Caucasus
CBAMFEW Community-based armyworm monitoring, forecasting and early warning
CERF Central Emergency Response Fund
CIT *Calliptamus italicus*
CLCPRO Commission de Lutte Contre le Criquet Pèlerin dans la Région Occidentale (Commission for the Desert Locust Control in the Western Region)
CNLA/CNLAA Centre National de Lutte Antiacridienne (National Locust Control Center)
CRC Commission for Controlling Desert Locust in the Central Region
CTE *Chortoicetes terminifera*
DDLC Department of Desert Locust Control
DLCO-EA Desert Locust Control Organization for Eastern Africa
DMA *Dociostaurus maroccanus*
DPPQS Department of Plant Protection and Quarantine Services
DPV Département Protection des Végétaux (Department of Plant Protection)
ELO EMPRES Liaison Officers
EMPRES Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases
ETOP Emergency Transboundary Outbreak Pest
Fledgling immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully

	<i>developed reproductive organs and hence cannot breed</i>	PRRSN	<i>Pesticide Risk Reduction through Stewardship Network</i>
GM	<i>Green Muscle (a fungal-based biopesticide)</i>	QQQU	<i>QQUelea QQUelea</i>
ha	<i>hectare (= 10,000 sq. meters, about 2.471 acres)</i>	SARCOF	<i>Southern Africa Region Climate Outlook Forum</i>
	<i>Integrated Regional Information Networks</i>	SGR	<i>Schistoseca gregaria</i>
IRLCO-CSA	<i>International Red Locust Control Organization for Central and Southern Africa</i>	SWAC	<i>South West Asia DL Commission</i>
ITCZ	<i>Inter-Tropical Convergence Zone</i>	TAG	<i>Technical Assistance Group</i>
ITF	<i>Inter-Tropical Convergence Front = ITCZ)</i>	Triangulation	<i>The process whereby pesticides are donated by a country or countries, with large inventories with no immediate need, to a country or countries with dire need and a third party steps into the negotiation table and assists with shipments, etc. Usually FAO plays the third party role.</i>
FAO-DLIS	<i>Food and Agriculture Organizations' Desert Locust Information Service</i>		
Hoppers	<i>young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)</i>	USAID	<i>Unites States Agency for International Development</i>
Hopper bands	<i>groups of hoppers aggregated and marching in unison and pretty much in the same direction</i>	UN	<i>the United Nations</i>
Kg	<i>Kilogram (~2.2 pound)</i>	ZEL	<i>Zonocerus elegans, the elegant grasshopper</i>
L	<i>Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)</i>	ZVA	<i>Zonocerus variegatus, the variegated grasshopper; this insect is believed to be emerging as a fairly new distractive dry season pest, largely due to the clearing of its natural habitat through deforestation, i.e. land clearing for agricultural and other development efforts.</i>
LMC	<i>Locusta migratoriacapito</i>		
LMM	<i>Locusta migratoria migratorioides (African Migratory Locust)</i>		
LPA	<i>Locustana pardalina</i>		
MoAFSC	<i>Ministry of Agriculture, Food Security and Cooperatives</i>		
MoARD	<i>Ministry of Agriculture and Rural Development</i>		
NCDLC	<i>National Desert Locust Control, Libya</i>		
NOAA	<i>National Oceanic and Aeronautic Administration</i>		
NSD	<i>Republic of North Sudan</i>		
NSE	<i>Nomadacris septemfasciata</i>		
OFDA	<i>Office of U.S. Foreign Disaster Assistance</i>		
PHD	<i>Plant Health Directorate</i>		
PHS	<i>Plant Health Services, MoA Tanzania</i>		
PPD	<i>Plant Protection Department</i>		
PPSD	<i>Plant Protection Services Division/Department</i>		

Who to Contact:

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