

**Emergency Transboundary
Outbreak Pest (ETOP) Situation
Report for February with a
Forecast till mid-April, 2013**

Summary

The Desert Locust (SGR¹) situation continued improving in February in Sahel West Africa and Northwestern Africa. Only small swarms from southwestern Morocco moved into northwestern Mauritania where 2,740 ha were treated. In Morocco, 2,300 ha were treated during this period.

The situation remained serious along the Red Sea coasts in Egypt, Sudan and Saudi Arabia where more than 85,000 ha were treated during February. In northern Sudan, locusts were reported moving into cropping areas along the Nile River.

On March 2nd, a swarm which originated from breeding in southeast Egypt near the Sudanese border and moved north along the Red Sea coast, reached Cairo. The swarm was later controlled by the National Locust Control team. Israel, Lebanon and Jordan have been alerted of the SGR situation (CNLA/Chad, CNLA/Mauritania, CNLA/Niger, DLCO-EA, DLCD/Libya, DPPQS/India, FAO-DLIS, INPV/Algeria, PPD/Sudan).

Forecast: SGR will likely continue breeding and hoppers, bands and small swarms will persist along the Red Sea

coasts. The situation will remain relatively calm in Sahel West Africa during the forecast period. Low number of adults will likely appear in Baluchistan, Western Pakistan and southeastern Iran and begin breeding. The situation will remain calm in other invasion regions during the forecast period (CNLA/Chad, CNLA/Mauritania, CNLA/Niger, DLCO-EA, DLCD/Libya, DPPQS/India, FAO-DLIS, INPV/Algeria, PPD/Sudan).

Other ETOPs

Red (Nomadic) Locust (NSE):

Preliminary results of the aerial surveys carried out during the last week of February in Ikuu-Katavi plains indicated the presence of many hopper bands and concentrations. A DLCO-EA spray aircraft is scheduled to carry out control operations in these areas. The operations are being coordinated by the IRLCO-CSA and MOAFSC/Tanzania and financed by the UN/Food and Agriculture Organization. Ground surveys in Malawi, Mozambique and Zambia were hampered by flooding in the region (IRLCO0CSA).

Forecast: Fledglings and hoppers are expected to appear in most of the outbreak areas during the forecast period. Intensive ground and aerial surveys and control operations are planned by IRLCO-CSA and Ministries of Agriculture in the affected countries (IRLCO-CSA).

Madagascar Migratory Locust (LMC):

The National Locust Control Center (CNA) reported 51,000 ha surveyed and 28,000 ha treated since the seasonal rains began in the 4th quarter of 2012. 2,000 ha were also treated against NSE (nomadic) locust in Sofia basin (DPV/CNA).

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

Forecast: LMC activities will continue and swarms and hoppers will appear in several places during the current outbreak season. DPV/CNA anticipates control operations to require hundreds of thousands of liters of pesticides over the next months.

Note: Considering the manner in which the most recent campaign was handled, which many technical experts viewed as a pre-maturely aborted operation, and given the insufficient local capacity, it is argued that a well thought out strategy that embraces preventive and curative interventions must be put in place ahead of the potentially serious outbreak seasons brewing (AELGA, FAO-ECLO). **End note.**

Moroccan (DMA), Italian (CIT) and Migratory (LMI) locusts in Central Asia and the Caucasus (CAC): No update was received for February and no activities are expected to have occurred during this period (AELGA).

Forecast: Locust activities are expected to commence in spring in this region and active surveillance and monitoring are essential (AELGA).

African Armyworm (AAW): AAW outbreaks were reported in Limpopo province in South Africa in February. High moth catches were reported in central and northern Tanzania. No AAW activities were reported in the outbreak areas in southern Africa during this period (DLCO-EA, IRLCO-EA).

Forecast: Kenya and northern central and northern Tanzania will likely remain prone to AAW outbreaks and southern

Ethiopia may experience some AAW activities. AAW situation will diminish in Malawi, Zambia, Zimbabwe, Mozambique and southern Tanzania during the forecast period (AELGA, DLCO-EA, IRLCO-CSA).

Quelea (QQU): QQU activities were not reported in the southern, central or eastern outbreak areas in Africa during February (AELGA, DLCO-EA, IRLCO-CSA).

Forecast: QQU birds will likely threaten small grain cereal crops in Tanzania, Zimbabwe and Kenya (AELGA, DLCO-EA, IRLCO-CSA).

OFDA/AELGA (Assistance for Emergency Pest Abatement) will continue monitoring ETOP situations closely in all regions and issue decadal and monthly updates and advise as necessary. **End summary**

Progress in SGR Frontline Countries:

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

Funds provided by the African Development Bank, USAID, the World Bank, France, FAO, host-governments, neighboring countries and others enabled the FCs to equip CNLAs with tools and materials and strengthen the infrastructure as well as help train staff to prevent and respond to SGR outbreaks. Through these supports and with their own resources, FCs were able to minimize and avoid the threats the SGR poses to food security and livelihoods of vulnerable communities.

It is worth noting that the ongoing insecurity situation in some of the SGR outbreak continues undermining implementation of timely and effective survey and control interventions.

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

OFDA ETOP Activities and Impacts

- OFDA Pesticides and Pest (P&P) Advisor attended the 11th EMPRES Western Region Liaison Officers Meeting and the 8th Steering Committee meeting from 21-29 January, 2013 in Dakar, Senegal. The meeting thoroughly discussed the SGR operations and activities undertaken by member-countries with the assistance from EMPRES WR program, the Regional Commission for the control of the SGR in the western and northwestern Africa, and the support by development partners, particularly USAID, AfDB, France and FAO and other partners. The proposed plans for the upcoming SGR outbreak seasons were tabled and reviewed.

OFDA P&P advisor viewed activities reported by the EMPRES/WR –member countries, the EMPRES WR program and the CLCPRO and the roles played by all in averting the 2012 locust outbreaks, commendable.

It is to be recalled that the SGR situation that began in southern Libya

and southeastern Algeria in early 2012 and later spread to Northern Sahel could have developed into more serious upsurges and severely impacted food security and livelihoods of vulnerable populations in the region, particularly Chad, Niger, Mali and Mauritania.

The advisor viewed programs and activities that member-countries, EMPRES WR and CLCPRO planned and proposed to address the next outbreak seasons as reasonable.

The advisor appreciated the generous in-kind contributions and technical support that neighboring countries, namely Algeria, Mauritania, Morocco and Senegal provided to Chad, Libya, Mali and Niger for the SGR operations and recommended that they are recorded and reported as part of the June 2012 FAO locust appeal.

USAID's continued support to the EMPRES program and the assistance it provided to abate SGR threats were lauded by the Honorable Senegal Minister of Agriculture and the Secretary General of MoA/Senegal, FAO/Resident Officer, member-country representatives and FAO staff (a detailed trip report is forthcoming).

- OFDA/TAG continues its sustainable pesticide risk reduction initiatives through stewardship network (SPRRSN) programs to ensure safety of vulnerable populations and protect their assets as well as shared environment against pesticide poisoning and pollution. 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 being considered as a boiler plate for similar initiatives.

- Discussions that began several months ago to launch similar PRR initiatives in North Africa and the Middle East were delayed by the unrests manifested. An effort is underway to resume dialogue with partners in these regions.

- OFDA continued its assistance for DRR capacity strengthening programs through a cooperative agreement with FAO to mitigate, prevent, and respond to and reduce the risk of ETOP emergencies, including unsafe use and mishandling of pesticides and application platforms.

- OFDA's assistance for obsolete pesticide prevention and management has enabled FAO to develop a pesticide stock managing system (PSMS) that has streamlined pesticide inventory monitoring and management. Thanks to OFDA's contributions PSMS has enabled participating countries to conduct regular inventories and monitoring and make informed decisions to prevent the accumulation of obsolete stocks and thereby avoid costly disposal operations.

- For the first time, OFDA has started supporting a program to strengthen national and regional capacities for ETOP operations in Central Asia and the Caucasus (CAC). The program which is being implemented by FAO is aimed at strengthening capacity of affected countries to coordinate locust monitoring and reporting as well as

jointly plan prevention and mitigation efforts to help abate and minimize the threats these pests pose to food security and livelihoods of vulnerable populations.

- OFDA just recently approved a three-year fixed obligation grant to support a project on scaling up community-based armyworm monitoring, forecasting and early warning. The program is aimed at reducing the risk of armyworm threats to food security and livelihoods of rural communities and vulnerable populations. Program activities are being coordinated by the Desert Locust Control Organization for Eastern Africa and implemented in Ethiopia, Kenya and Tanzania.

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

http://transition.usaid.gov/our_work/humanitarian_assistance/disaster_assistance/locust/ end note.

Weather and ecological conditions

The western SGR outbreak areas remained dry. The central and eastern outbreak regions received low to moderate rains. The Intern Tropical Convergence Zone (ITCZ) over Africa was slightly inching northward, but still situated south of the equator. The weather stations near NSE outbreak areas reported abundant rains and in some areas, i.e., in the Buzi-Gorongosa plains of Mozambique and Lake Chilwa/Lake Chiuta of Malawi, localized flooding. As a result of moist soil, vegetation is green and conditions are favorable for the NSE breeding in those areas. The rainy season in the NSE outbreak areas will diminish and vegetation will be drying up during the forecast period (IRLCO-CSA).

Note: *The shift in the ecology and changes in the weather patterns of ETOP habitats are believed to exacerbate the risk of pest*

outbreaks, resurgence and lead to emergence of new pests. Regular monitoring and reporting of anomalous changes in habitats and pest situation are essential. End note.

Detailed accounts of the ETOP situation and predictions for the next six weeks are presented henceforth.

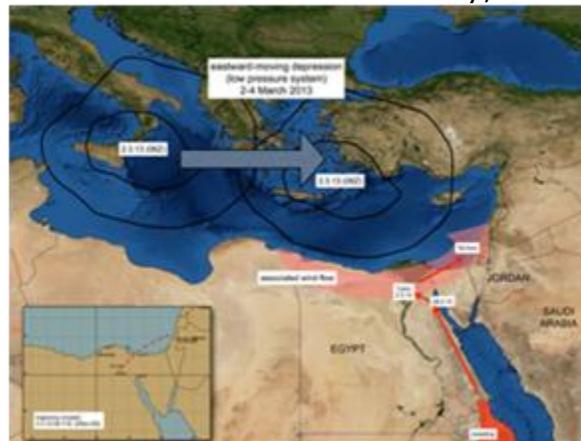
SGR - Western Outbreak Region: In Morocco, significant numbers of solitary immature adults were detected in Bouarfa in the southwestern border region of the country. Groups of transient immature and mature adult swarms and late instar hoppers were detected and treated on 2,300 ha in Adrar Settouf and in Boujdour in February. A few small swarms moved into northwestern Mauritania where a medium size swarm was detected on February 4th, 7th and 9th 90 km northeast of Nouadhibou and some 2,740 ha were treated during this period. The situation further improved in other countries in the region and only isolated adults were reported in the Air Mountains in northern Niger (CNLA/Chad, CNLA/Mauritania, CNLA/Niger, FAO/DLIS, INPV/Algeria).

Forecast: The favorable ecological conditions and the low temperatures that persisted in the south, particularly in the Adrar Settouf zone in Morocco will likely allow escapee locusts to persist. However, strong winds from Chergui and the sand storms can favor movements of groups of immature adults towards the coastal zones on West of Adrar Settouf. Hence, vigilance must be exercised to avert any major developments. Locust numbers will likely continue declining in other countries in the western outbreak region during the forecast period (CNLA/Mauritania, CNLAA/Morocco).

SGR - Central Outbreak Region: Locust numbers continued increasing along both

sides of the Red Sea coasts where hopper bands and swarms were reported in southeast Egypt, Sudan, and Saudi Arabia and to some extent in northeast Eritrea and in February. During this month, more than 85,000 ha were treated in the three countries.

In Egypt, an immature swarm reached the eastern Cairo districts of New Cairo and Mokattam on March 2nd and dispersed into several smaller swarms. The swarm originated in southeast Egypt between Berenice and the Sudanese border. As vegetation dried out, small groups and swarms of immature adults moved slowly north along the Red Sea coast, reaching Marsa Alam on 8 February, Hurghada on the 16th and Zafarana on the 26th. From there, a few moved to Cairo on Saturday, March 2nd.



(Locust seen in Cairo on March 2nd, FAO, 3/4/2013)

The swarm reached Cairo by flying on warm southerly and southeasterly winds associated with a low pressure system over the central Mediterranean. As this system moves further east in the coming days, the winds will shift and come from the west and then from the north by 5 March. As locusts fly with the wind, this will allow them to move towards northeast Egypt, the Sinai and, perhaps, Israel and southwest Jordan today and tomorrow.

Egypt National Locust Control team controlled the swarm in Cairo and no more swarms were reported during this time. Survey and control operations continue in all infested areas of the

country. Israel, Lebanon and Jordan have been alerted (FAO-DLIS).

In Sudan, aerial and ground control operations treated more than 60,974 ha on the Red Sea coast during February. Saudi Arabia and Egypt treated 14,470 ha and 12,374 ha, respectively and some 200 ha were treated in Eritrea, during this period. No locusts were reported in Ethiopia and isolated adults were reported along the Red Sea coast in Yemen and other countries remained calm during this period (DLCO-EA, FAO/DLIS).



(SGR swarm movement between Sudan and Egypt, FAO, 3/4/2013)

Forecast: The second generation breeding will likely occur along both side of the Red Sea coasts in southern Egypt, Sudan and northern Saudi Arabia and hoppers, bands and small swarms will appear. Some adults may reach cropping areas in Egypt and some may move into the interior of Saudi Arabia and begin breeding. Scattered adults may begin appearing in spring breeding areas in the interior of Saudi Arabia. The swarm that was detected in Cairo on March 2nd will likely be the last to invade the city and the situation will likely remain calm in Sahel West Africa and Northwest Africa during the forecast period (DLCO-EA, FAO-DLIS, PPD/Sudan).

SGR - Eastern Outbreak Region: No locusts were reported in India, Iran or

Pakistan in February (DPPQS/India, FAO-DLIS).

Forecast: Low numbers of adults may appear in Baluchistan in western Pakistan and in southeastern Iran, but significant developments are not expected during the forecast (DPPQS/India, FAO-DLIS).

Red (Nomadic) Locust (NSE): The preliminary results of the aerial surveys carried out on February 26-28 in Ikuu-Katavi plains indicated the presence of many hopper bands and concentrations. A DLCO-EA spray aircraft is conducting control operations against these locusts. Survey operations will continue in Rukwa Valley and Wembere plains, Malagarasi Basin and Bahi Valley in Tanzania. IRLCO-CSA and MOAFSC/Tanzania are coordinating operations and UN/FAO is providing financial support.



NSE outbreak countries and localities (yellow) and localities (red dots) (IRLCO-CSA)

Forecast: Hoppers will fledge and form adults which will start concentrating and forming groups by end of March 2013. Control operations being carried out in Tanzania by IRLCO-CSA and MoAFSC are expected to significantly reduce the threats of the locusts in the outbreak areas. Favorable conditions will likely allow fledging and groups to form in Lake

Chilwa/Lake Chiuta plains of Malawi, Buzi-Gorongosa plains and Dimba plains of Mozambique and Kafue Flats of Zambia and threaten crops. IRLCO-CSA plans to undertake aerial survey to ascertain locust populations in these outbreak areas during April/May 2012 (IRLCO-CSA).

Madagascar Migratory Locust (LMC) and Red (Nomadic) Locust (NSE):

LMC: A late received report indicated that medium to high density (40 - 500 insects/m²) immature locusts and groups were detected in the southwest, northwest and the central regions. Swarms were reported on Zomandao, Horombe and Bekily highlands, in Belafy, Antsalova, and Mandoto in the mid-West here the risk of crop losses (corn and rice) could reach 50%. Swarms were also reported in Bemara and in the North, but the situation in Mahajanga basin was unclear at the time this update was received. Second generation breeding is in progress and 3rd generation will likely begin by the end of March.

NSE: Favorable conditions exist in the Sofia basin for the development of NSE. The synergy between the Malagasy and the NSE (red/nomadic) locust could exacerbate the situation.

Interventions:

The National Locust Control Center (CNA) reported 51,400 hectares infested and 28,000 ha treated against LMC since the beginning of the rainy season in the 4th quarter of 2012. 2,000 ha were treated against NSE in Sofia basin (DPV/CNA).

Forecast: Given the favorable existing situation, the locust swarms could begin appearing in the central plateau before the beginning of the next rainy season (DPV/CNA).

Note: Considering the most recent campaign operations which were viewed by some technical experts as pre-maturely aborted operations largely due to lack of resources and inadequate capacity at the DPV level, many argue that it is prudent to put in place a well thought out strategy that embraces preventive and curative interventions ahead of potentially serious breeding/outbreak seasons to abate imminent threats the locusts pose to food security of vulnerable communities (AELGA, FAO-ECLO). **End note.**)

Based on the aforementioned assertion, UN/FAO has been working closely with MoA/Madagascar to develop medium to long-term programs to address the recurring locust problems in the country. The first draft document which outlines the program's activities for the next three years comes at an estimated staggering cost of USD 41.5 million. The conceptual program anticipates more than 2.15 million hectares to be sprayed over the next three years. The program was presented on February 5th, 2013 in Madagascar and discussed with GoM's development and humanitarian partners (AELGA, FAO).

Moroccan (DMA), Italian (CIT) and Migratory (LMI) locusts in Central Asia and the Caucasus (CAC): No update was received in February from CAC and no locust activities are expected during this time (AELGA).

Forecast: DMA and LMI will begin appearing next spring. Extensive hatching could form significant numbers of LMI hoppers during spring breeding season in the flood plains of the Aral Sea and the surrounding areas where massive egg laying occurred late last year. Provided ecological conditions become favorable (moist ground not heavily flooded habitat) in the Aral Sea flood plains, the region could experience extended invasions for months to come (AELGA, FAO-AGPM, miscellaneous).



(Locust prone CAC countries, FAO)

Australian Plague Locust (APL): No update was available at the time this report was compiled. However, based on a previous forecast and archived data, it is likely that locust numbers may have been low and adult numbers continued declining and will remain so. Hoppers may have formed from eggs laid in Southwest and Central West Queensland where heavy rains fell the previous months (APLC).



(Australian plague locust, source: APLC)

Timor and South Pacific: No update was received on the locust situation in Timor and South Pacific in February. However, locust and grasshopper activities are expected to have occurred during this period (AELGA).

African Armyworm (AAW): AAW outbreaks occurred in the Limpopo province of South Africa in February. No outbreaks were reported in other outbreak countries in southern Africa. AAW were

reported damaging late stage maize leaves in Meatu District, Shinyanga region in Tanzania in February. Increased numbers of moth catches were reported in northern Tanzania (IRLCO-CSA, PHS/Tanzania).



(Late stage maize leaves damaged by AAW caterpillars in Meatu District, Shinyanga region in Tanzania; a phenomenon not all too common as the AAW caterpillars prefer feeding on younger leaves, photo courtesy GASPAP, February, 2013)

Forecast: As the ITZC continues migrating northward, AAW outbreaks will begin appearing in northern Tanzania, Kenya and perhaps southern Ethiopia. The situation will remain calm in Malawi, Mozambique and Zimbabwe during the forecast period (AELGA, DLCO-EA, IRLCO-CSA).

Farmers and extension agents are advised to remain vigilant and keep an eye on cereal crops and hedges and inspect plants regularly for AAW caterpillars. Trap operators, including community-based forecasters are strongly advised to inspect traps on a daily basis and report moth catches to the national forecasting units and relevant authorities immediately.

Cataloipus sp.: Concentrations of a grasshopper species, *Cataloipus* sp., were reported causing damage to maize in Buzi plains in Mozambique. Ground control operations were carried out by farmers with assistance from the Ministry of Agriculture.

Quelea (QQU): QQU activities were not reported in the eastern, southern central and south outbreak areas, i.e., in Ethiopia, Kenya, Malawi, Mozambique, Tanzania, Zambia and Zimbabwe in Africa in February (AELGA, IRLCO-CSA).

Forecast: As rain-fed and irrigated small grain cereal crops continue maturing from February through April, QQU outbreaks are expected to occur in Kenya, Tanzania, Mozambique and Zimbabwe (AELGA, IRLCO-CSA).

Facts: *QQU birds can travel ~100 km/day looking for food. An adult QQU bird can consume 3-5 g of grain and perhaps destroy the same amount each day. A QQU colony can contain a million 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 rodent outbreaks were reported during February.

Forecast: Rodents remain a constant threat to cereal and other produces in many outbreak and invasion areas and active routine surveillance and preventive interventions must be maintained at all times (AELGA).

Note: *Several raptor birds, such as barn owl, Tyto Alba and other animals are known nature's biological control agents that contribute to maintaining the balance between moderate rodent outbreaks and a period of lull. **End note.***

Front-line countries where ETOP outbreaks first occur are advised to remain vigilant. Invasion countries should maintain the capacity to monitor and avoid any unexpected surprises. DLCO-EA, IRLCO-CSA, national PPDs, CNLAs, DPVs, ELOs, and others are encouraged to continue

sharing information with partners and other stakeholders as often as possible. Lead farmers and community forecasters should be encouraged to remain vigilant and report any ETOP sightings to field agents and other contact persons.

Inventories of Acridid Pesticide Stocks

Pesticide inventories changed in February, due to control operations carried out in Egypt, Morocco, Mauritania, Saudi Arabia, Sudan and to some extent Eritrea. A cumulative total of 90,000 ha were treated during this period (Sudan = 60,974, Egypt = 12,378, Mauritania = 2,740, Morocco = 2,300, Saudi = 14,470 and Eritrea = 200). Hoppers, immature and or mature swarms and groups were controlled during this time. This is 32,000 + ha more than ar4as treated in January.

Mindful of the risk of pesticides becoming obsolete once passed their usability, ETOP-prone countries, particularly those with large inventories, but 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 discard them immediately. ***It is worth mentioning that Mauritania, Senegal, Algeria and Morocco donated more than 120,000 litres of pesticides to Niger, Mali and Chad to assist with the SRG control operations.***

All options should be explored to avoid the risks that old stocks could pose to humans, the environment, and non-target organisms as well as the huge financial and environmental burdens associated with disposal options.

A judiciously executed triangulation of stocks from countries with large inventories to where there are immediate needs is a win-win deal 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 and thereby reduce pesticide related health*

risks and environmental pollution and improve food security as well as contribute to the national economy. **End note.**

Estimates of (ETOP) pesticide inventories

Country	Quantities in '000 l/kg ^{\$}
Algeria	1,200~
Chad	102.66~
Eritrea	43.7~
Egypt	Data not available
Ethiopia	1.6+~
Libya	25
Madagascar	Data not available
Mali	208.8d~
Mauritania	161.6+~
Morocco	4,100~
Niger	45.00~
Senegal	156~
Saudi Arabia	Date not available
Sudan	462.97
NSD	860"
Tunisia	167.6~
Yemen	33.00 + .527 kg GM~

These quantities include ULV, EC and dust formulations
 ~ data not necessarily current
 d = Mali donated 21,000 l for RL in Malawi, Mozambique and Tanzania late last year and FAO facilitated the triangulation + quantity reported in Agadez
 @ left-over stocks of Chlopyrifos from the 2003-5 DL campaign was tested for quality and found to be usable through 2012
 This includes EC, ULV and Dust for all crop protection uses
 GM = GreenMuscle
 b = biopesticide (Madagascar)
 c = conventional pesticides (Madagascar)
 g = insect growth regulator (Madagascar)

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 Pélerin 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
 DL Desert Locust
 DLCO-EA 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

	<i>much the same phenology as mature adults, but lacks fully developed reproductive organs and hence cannot breed</i>	PHD	<i>Plant Health Directorate</i>
		PHS	<i>Plant Health Services, MoA Tanzania</i>
		PPD	<i>Plant Protection Department</i>
GM	<i>Green Muscle (a fungal-based biopesticide)</i>	PPSD	<i>Plant Protection Services Division/Department</i>
ha	<i>hectare (= 10,000 sq. meters, about 2.471 acres)</i>	PRRSN	<i>Pesticide Risk Reduction through Stewardship Network</i>
	<i>Integrated Regional Information Networks</i>	QQU	<i>Quelea quelea</i>
IRLCO-CSA	<i>International Red Locust Control Organization for Central and Southern Africa</i>	SARCOF	<i>Southern Africa Region Climate Outlook Forum</i>
		SGR	<i>Schistoseca gregaria</i>
		SWAC	<i>South West Asia DL Commission</i>
ITCZ	<i>Inter-Tropical Convergence Zone</i>	TAG	<i>Technical Assistance Group</i>
		USAID	<i>Unites States Agency for International Development</i>
ITF	<i>Inter-Tropical Convergence Front = ITCZ)</i>	UN	<i>the United Nations</i>
FAO-DLIS	<i>Food and Agriculture Organizations' Desert Locust Information Service</i>	ZEL	<i>Zonocerus elegans, the elegant grasshopper</i>
Hoppers	<i>young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)</i>	ZVA	<i>Zonocerus variegatus, variegated grasshopper (This insect is emerging as a fairly new dry season pest largely due to the destruction of it natural habitat through deforestation.)</i>
Hopper bands	<i>groups of hoppers aggregated and marching in unison and pretty much in the same direction</i>		
Kg	<i>Kilogram (~2.2 pound)</i>		
L	<i>Liter (1.057 quarts or 0.264 gallon or 33.814 US fluid ounces)</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>		
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>		

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