

**Emergency Transboundary
Outbreak Pest (ETOP) Situation
Update for June with a Forecast
till mid-August, 2015**

SUMMARY

The Desert Locust (SGR¹) situation remained calm in the primary breeding areas during June. No locusts were reported in Northwest Africa and Sahel West Africa, along the Red Sea coasts or along the Iran-Pakistan borders or the Indo-Pakistan borders during June. Small-scale breeding is likely in a few places in the western, central and eastern outbreak regions where rainfalls have occurred or may commence during the forecast period.

OTHER ETOPS

Red (Nomadic) Locust (NSE):

Small groups and swarmlets of NSE were reported in the primary outbreak areas in **Tanzania**. A similar situation is likely in **Malawi**, **Mozambique** and **Zambia**. Continued vegetation burning and dry weather will force more locusts to further concentrate and form swarms, which, if left uncontrolled, will migrate to neighboring areas and threaten crops and pasture.

Madagascar Migratory Locust (LMC):

No update was received at the time this report was compiled, but swarms and hoppers are expected to

have persisted in the outbreak and invasion areas in June.

Moroccan (DMA), Italian (CIT), Asian Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC): No update was received at the time this report was compiled, however, DMA and CIT activities are expected to have continued in several outbreak areas and LMI may have begun appearing in a few places during June.

African Armyworm (AAW): AAW activities were not reported in the DLCO-EA or IRLCO-CSA regions during June. The AAW situation is expected to remain calm during the coming period.

Quelea quelea (QQU): QQU birds were reported causing damage to small grain crops in **Kenya** and **Tanzania** during June. The birds will continue threatening small grain crops in these countries and perhaps in **Zimbabwe** during the forecast period.

Active surveillance, monitoring and timely preventive interventions remain essential to avoid unexpected surprises in all ETOP breeding and outbreak countries. Invasion countries are advised to remain vigilant and execute essential preventive interventions as often as necessary to secure their crops and pasture

OFDA/PSMS Plant Health and Pesticide unit (Assistance for

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

Emergency Locust/ Grasshopper – Pest - Abatement) will continue monitoring ETOP situations closely and issue alerts and updates and provide advice as often as necessary. **End summary**

*Thanks to increased awareness among national authorities and the support from USAID/OFDA and other partners, SGR frontline and invasion countries in Northern Africa and Sahel West Africa, namely **Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal** and **Tunisia** have established autonomous national unit for the prevention and control of locusts.*

OFDA ETOP Activities and Benefits

Resources from USAID/OFDA and other donors enabled FAO to establish an online Pesticide Stock Management System (PSMS) in more than 50 countries around the globe. Thanks to the PSMS system, participating countries are now able to maintain up to date inventories and make informed decisions to prevent unnecessary accumulations of obsolete pesticide stocks. This system has enabled many countries to prevent unnecessary procurement or hoarding of pesticides, avoid costly disposal operations, improve health and safety of their citizens and protect their shared environment.

The OFDA-sponsored tri-state program on scaling up community-based armyworm monitoring, forecasting and

early warning (CBAMFEW) is on track. The program aims at reducing the threats of AAW to food security and livelihoods of vulnerable populations through improved information collection, analysis and reporting and has significantly contributed to farmers' skills, knowledge and perceptions of AAW.



Mr. Peter Mugowairia, one of the two farmer forecasters in Naivasha Sub-County, Karati sub-location, Nyondia village in Kenya posed near a pheromone trap and a rain gauge explaining how he monitors, records and forecasts AAW situation in his village. The farmer forecaster received AAW training through OFDA funded project being implemented in Kenya, Ethiopia and Tanzania (photo courtesy: Y. Belayneh).

*OFDA Senior Plant Health Pests and Pesticides Advisor visited more than 18 CBAMFEW project implementation and monitoring sites in **Kenya** and **Tanzania** during the second and third dekads of May, 2015. The advisor was pleased with farmer forecasters' knowledge, skills and experiences they acquired through the CBAMFEW project and the confidence they have built to stand up to the challenges of AAW threats.*

During his visits, OFDA Senior Advisor witnessed farmer forecasters at all 18

AAW monitoring sites declaring that AAW outbreaks are no longer a mystery or a curse or a threat to them. Thanks to the support from USAID/OFDA and partnering organizations, farmers now know how to prevent AAW outbreaks from occurring and stop the caterpillars from causing damage to their crops and pasture.



OFDA technical advisor inspecting a pheromone trap and a rain gauge during the recent TDY to CBAMFEW sites in Tanzania and Kenya (Photo courtesy: Y. Belayneh)

*The CBAMFEW project is implemented in more than 240 villages in 30 districts in **Ethiopia, Kenya and Tanzania** in close collaboration with DLCO and national partners – click bit.ly/1C782Mk to view approximated project sites in the three countries (this map is work in progress and will be continuously updated with verified coordinates and additional important data layers from National staff and DLCO-EA on cropping patterns, AAW outbreak frequencies, request for AAW outbreak interventions, population load, weather, etc.*

As of now, the CBAMFEW project has successfully completed 72 of its original 87 milestones, excluding 2 quarterly

reports. Over the course of the past two and a half years, the project has conducted several training programs, national, district and village meetings and workshops. The project has also launched an innovative mobile phone-based data collection and management technology. This innovative technology has been implemented in Ethiopia, piloted in Tanzania and will soon be fully implemented in Tanzania and Kenya. OFDA/TAG intends to work with other partners to expand this innovative technology to benefit other AAW affected countries.

During his recent visit to Tanzania, OFDA Senior Advisor observed farmer forecasters being trained in mobile technology exclusively developed for monitoring and reporting AAW. The



training was led by the Tanzania national armyworm monitoring unit and the DLCO base manager in Tengeru, Arusha. OFDA advisor provided advice to partners on the implementation of the technology (see photo above, courtesy: Y. Belayneh).

OFDA continued its support for sustainable pesticide risk reduction

initiatives through stewardship network (SPRRSN). This initiative is aimed at strengthening capacities to help reduce pesticide related risks and improve safety of vulnerable populations, their assets and the environment.

OFDA/TAG has successfully launched two sub-regional SPRRSNs in Eastern Africa and the Horn. The Horn of Africa SPRRSN initiative has created an Association dubbed as Pesticide Stewardship Association-Ethiopia (PSA-E) and PSA-E is considered a model for future similar initiatives across similar regions.

OFDA-TAG has plans to extend the SPRRSN initiative to other parts of Africa, the Middle East, CAC and other regions. In his recent visit, OFDA Senior Technical Advisor for Pesticides and Pests observed PSA-N activities in Ethiopia and noted progresses and constraints among beneficiaries.

The PhD candidate that OFDA/PSPM is co-sponsoring with the Swedish University of Agricultural Sciences and institute of Sustainable Development recently gave a presentation USAID staff and other interested groups. The candidate's presentation was focused on some of the research work he had conducted on pesticide stewardship networking in Ethiopia. The presentation was well received by the attendees.

OFDA continued its support for the DRR program to strengthen national and regional capacities for ETOP operations.

The program which is implemented through FAO has assisted frontline countries to mitigate, prevent, and respond to ETOP outbreaks. It has also helped participating countries reduce potential emergencies that emanate from misuse and mishandling of pesticides, pesticide-incorporated materials and application platforms.

OFDA DRR program on strengthening national and regional capacities for ETOP operations in Central Asia and the Caucasus (CAC) is on track. The program also promotes collaboration among neighboring countries and encourages coordination of joint monitoring, surveillance, reporting and preventive interventions to help minimize the threats of ETOPs to food security and livelihoods of vulnerable populations.

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

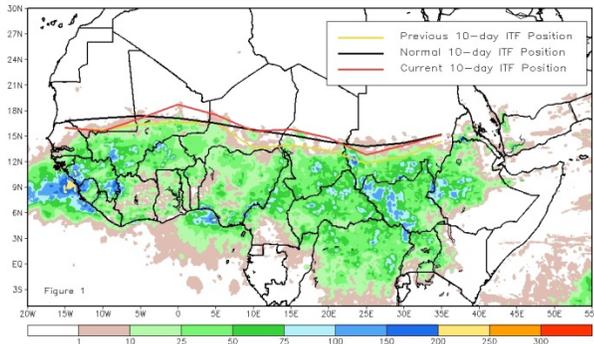
<http://www.usaid.gov/what-we-do/working-crises-and-conflict/responding-times-crisis/how-we-do-it/humanitarian-sectors/agriculture-and-food-security/pest-and-pesticide-monitoring>

Detailed information on ETOP situation and forecast as well as weather and ecological conditions is provided hereafter.

Weather and ecological conditions:
From 21-30 June, the Inter-Tropical Front (ITF) continued northward migration resulting in early rains in the Sahel. Its

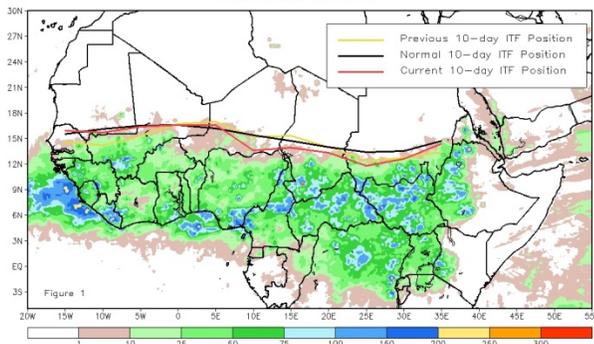
position, on average for all regions, was slightly below the climatological normal for the last dekad of June. From 10W-10E, ITF's averaged position was approximated at 16.8N, nearly 1.0 degree higher than the position in mid-June. In the eastern section, from 20E-35E, the Front position was approximated at 14.1N, slightly south of the climatological normal position of 14.4N for the 3rd dekad of June. The below figure shows the current position of the ITF relative to its climatological position during the 3rd dekad of June and its position during the 2nd dekad of June (NOAA, 7/2015).

Current vs. Normal Dekadal ITF Position and RFE Accumulated Precipitation (mm) June 2015, Dekad 3



During the 2nd dekad of June, the ITF position was slightly northward (15.8N) in the west (10W-10E) very close to the 16.2N climatological average for this period of June.

Current vs. Normal Dekadal ITF Position and RFE Accumulated Precipitation (mm) June 2015, Dekad 2

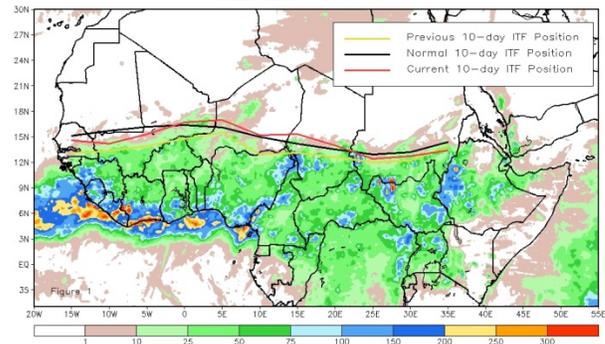


In the eastern portion (20E-35E), the Front showed a slight southerly retreat

(13.0N) compared to its position during the 1st dekad of June and south of the climatological normal position of 13.9N for this period of the month. The above figure shows the IFT position for the 2nd dekad of June (red) relative to its climatological position (black) for this period and its position for the 1st dekad of June (yellow) June (NOAA, 6/2015).

During the 1st dekad of June, the ITF experienced moderate northward migration in the west and a slight advancement in the east compared to its position during the 3rd dekad of May. The western averaged position (10W-10E) of the ITF was approximated at 15.7N, which is very close to the climatological normal position of 15.9N for the 1st dekad of June.

Current vs. Normal Dekadal ITF Position and RFE Accumulated Precipitation (mm) June 2015, Dekad 1



The mean eastern averaged (20E-35E) position of the ITF was approximated at 13.1N, slightly south of the climatological normal position of 13.5N for the 1st dekad of June. The figure above shows the position of the ITF during the 1st dekad relative to its climatological position during the 3rd dekad of May (NOAA, 6/2015).

Ecological conditions remained unfavorable in spring breeding areas in northwestern Africa during June. Morocco experienced warm dry weather during this month with lower rainfall in the

higher and Middle Atlas, the surrounding areas, and Eastern parts with maximum temperatures reaching 40-44°C in the southeast, the extreme south and inland. Vegetation was generally dry in the south and southeast of the country.

Dry weather and mild to cold temperature persisted in the NSE outbreak areas. Floods in Buzi-Gorongosa and Lake Chilwa plains significantly receded creating large areas of green vegetation favorable for further concentrations of locust. In CAC, the cooler than normal weather gave in to milder and warmer temperatures. In Madagascar, dry weather persisted on the plateaus, but warm weather still prevailed in the mid to low altitude zones.

Note: *Changes in the weather pattern can contribute to ecological shift in ETOP habitats and increase the risk of pest outbreaks, resurgence and even emergence of new pests. 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 in **Uzbekistan**.*

*The **Asian migratory locust**, once a univoltin (a single generation per year) insect, 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 and others. Regular monitoring and documenting anomalous manifestations in pest behavior and habitats and timely reporting remain*

*critical to help avoid and minimize potential damages to crops, pasture and subsequent negative impact on livelihoods of vulnerable communities and populations. **End note.***

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

SGR – Western Outbreak Region: The SGR situation remained calm in **Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger** and **Tunisia** during June (CNLA/Chad, CNLCP/Mali, CNLA/Mauritania, CNLAA/Morocco, CNLA/Niger, CNLA/Tunisia, NCDLC/Libya).

Forecast: Small-scale breeding is likely in summer breeding areas in Chad, Mali, Mauritania and Niger where the seasonal rains are expected during the forecast period (AELA, FAO-ECLO).

SGR (Desert Locust) – Central Outbreak Region: Surveys were not deemed necessary in the central outbreak region and no locusts were reported in **Sudan, Eritrea, Saudi Arabia, Yemen, Oman, Ethiopia, Somalia** or **Djibouti** in June (DLCO-EA, DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Sudan).

Forecast: Small-scale breeding is likely in the summer breeding areas in the interior of Sudan and western Eritrea during the forecast period (DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Sudan).

SGR - Eastern Outbreak Region: The SGR situation remained calm in **India** and **Pakistan** during June.

Forecast: Small-scale breeding is likely along the Indo-Pakistan borders during the forecast period where early monsoon rains were reported (FAO-DLIS).

Red (Nomadic) Locust (NSE): NSE groups and small swarms were reported in Ikuu-Katavi plains, **Tanzania** where grass burning has forced locusts to aggregate in patches of unburned vegetation. A similar situation is likely in Malagarasi Basin and North Rukwa in **Tanzania**, in Lake Chilwa/Lake Chiuta plains that transcend **Malawi** and **Mozambique** as well as in Buzi-Gorongosa and Dimba plains in Mozambique and Kafue Flats in **Zambia** (IRLCO-CSA).

Forecast: With the dry season setting in, swarms will further develop in the primary outbreak areas in Tanzania, Malawi and Mozambique and to some extent in Zambia, and will likely invade neighboring areas. Surveillance and preventive interventions remain essential to avert potential crop damage and reduce the pre-breeding populations.

IRLCO-CSA plans to carry out surveys and control, but lacks resources and is **appealing to its Member States to settle their arrears in time for the organization to do its job effectively and efficiently** (IRLCO-CSA).

Active surveillance, monitoring and preventive interventions remain critical to detect and abate the movement of hopper bands and swarms from breeding habitat and cause significant damage to crops and pasture.

Madagascar Migratory Locust (LMC): No updates were received at the time this report was compiled. However, it is likely that locust activities continued during June in the Central Invasion Areas. Given the prevailing situation, one of the two aerial bases was demobilized on 29 May and the other base is being maintained through 15 July, 2015 to ensure survey and control in the Central

Invasion Area and the Outbreak Area. The locust situation was to be assessed by end of June and the need to maintain the aerial base beyond 15 July was to be determined then.

Note: A successful completion of the three year Malagasy locust campaign will depend on closing the gap of resources in time to ensure expedited launching of aerial survey and control operations and finish the job. The 2nd phase of the three-phase locust campaign began in September 2014 and is expected to be concluded in August, 2015. **End Note.**

Forecast: Locusts will likely appear in smaller numbers in a few places during the forecast period.

Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC): No update was

received at the time this report was compiled, however, DMA and CIT hopper formations and/or fledglings are expected to have continued throughout the outbreak areas despite the fact unusually cooler and rainy weather conditions that delayed hatching. LMI activities are also expected to have started in the primary outbreak areas in the Aural Sea flood plains (AELGA).

Forecast: DMA, CIT and LMI will likely continue further developing during the forecast period (FAO-ECLO, OFDA-AELGA).

Italian, Migratory and Moroccan locusts are a constant threat to the CAC region. These pests can profusely multiply and attack tens of millions of hectares of crop land, pasture land and affect livelihoods of more than 20 million vulnerable rural inhabitants that eke 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. Most of the countries affected by these three locust species are relatively new and lack the capacity to effectively prevent and control these pests (The once robust centralized pest control capacity in these countries disappeared with the downfall of the Soviet system leaving each country to fetch for itself).

Currently, USAID/OFDA is sponsoring project activities through the UN/FAO to help strengthen/build national and regional capacity to prevent and control the threats these notorious pests pose to vulnerable populations in these regions.

Timor and South Pacific: No update was received from East Timor during June, but ETOP presence is likely.

African Armyworm (AAW): AAW activities were not reported during June in all outbreak areas (DLCO-EA, IRLCO-CSA, OFDA/AELGA)

Forecast: AAW outbreaks are not likely during the forecast period (IRLCO-CSA, OFDA/AELGA).

Quelea (QQU): QQU birds were reported attacking wheat, sorghum and millet crops in Narok Country in **Kenya** where Crop Protection Division of MoA/Kenya carried out control operations using DLCO-EA spray aircraft. Survey and monitoring were underway in other potential outbreak areas. QQU outbreaks were also reported in Musoma and Shinyanga regions in **Tanzania** and assessment is underway by MoA to determine the need for control operations (DLCO-EA, IRLCO-CSA).

Forecast: Though reduced, QQU birds will likely continue posing a problem to small grain cereal growers in **Kenya** and **Tanzania**. The

birds will likely pose a threat to wheat crops in **Zimbabwe** as well during the forecast period (IRLCO-CSA, OFDA/AELGA).

Facts: QQU birds can travel ~100 km/day looking for 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 capable of consuming and destroying 6,000 to 10,000 kg of seeds/ day, enough to feed 12,000-20,000 people/day.

Rodents: Rodent outbreaks were reported in Tanzania where the pest has been a major threat to crops. Rodents are a constant threat to crops and other produce and require active surveillance and preventive interventions to avoid any major threats (OFDA/AELGA).

Front-line countries must remain vigilant. Invasion countries should maintain regular monitoring. DLCO-EA, DLCCs, IRLCO-CSA, national PPDs, CNLAs, DPVs, ELOs, etc., are encouraged to continue sharing ETOP information with stakeholders as often and as early as possible. Lead farmers and community forecasters must remain vigilant and report ETOP detections to relevant authorities immediately.

Inventories of Pesticide Stocks for ETOP Control

Control operations were not carried out in most of the outbreak areas and pesticide inventories remained unchanged during June.

Note: Some of the data on pesticide inventories provided in the following table are not necessarily current due to the fact that some countries tend to issue updates after activities are concluded and/or use pesticides for other pests. **End note.**

OFDA/AELGA encourages countries to continue exploring alternatives such as IPM to minimize and reduce risks associated with

pesticide stockpiling. A judiciously executed triangulation of surplus stocks from countries with large inventories to countries where they are much needed is a win-win situation worth considering.

Note: A Sustainable Pesticide Stewardship (SPS) can considerably strengthen the 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 ultimately contribute to the national economy. An SPS can be effectively established by linking key stakeholders in neighbouring countries.

End note.

Table 1. ETOP Pesticide Inventory in Frontline Countries

Country	Quantity (l/kg) [§]
Algeria	1,190,000~ ^D
Chad	43,400
Eritrea	-16,897~
Ethiopia	-3,975~
Libya	25,000~
Madagascar	206,000~
Mali	32,000 ^D
Mauritania	43,400
Morocco	3,757,000~ ^D
Niger	75,800
Oman	14,440
Senegal	156,000~ ^D
Sudan	632,718~
Tunisia	77,530
Yemen	22,000@ + 300 kg GM~
[§] Includes different kinds of pesticides in ULV, EC and dust formulations; ~ data not current; ^D = Morocco, Mauritania and Algeria donated/pledged 200,000, 25,000 l,	

and 30,000 l of pesticides to Madagascar in 2013; Mali donated 21,000 l for NSE to Malawi, Mozambique and Tanzania in 2012 and FAO facilitated the triangulation Mauritania donated 25,000 and 30,000 l of pesticides to Libya in 2012 and Madagascar in 2013; GM = GreenMuscle™ (fungal-based biological pesticide); @includes donations from Saudi Arabia

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>
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>
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

	<i>Control Center)</i>		<i>synonym = nymphs or larvae)</i>
CRC	<i>Commission for Controlling Desert Locust in the Central Region</i>	<i>Kg</i>	<i>Kilogram (~2.2 pound)</i>
CTE	<i>Chortoicetes terminifera</i>	<i>L</i>	<i>Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)</i>
DDLC	<i>Department of Desert Locust Control</i>	<i>LMC</i>	<i>Locusta migratoriacapito</i>
		<i>LMM</i>	<i>Locusta migratoria migratorioides (African Migratory Locust)</i>
DLCO-EA	<i>Desert Locust Control Organization for Eastern Africa</i>	<i>LPA</i>	<i>Locustana pardalina</i>
DMA	<i>Dociostaurus maroccanus</i>	<i>MoAFSC</i>	<i>Ministry of Agriculture, Food Security and Cooperatives</i>
DPPQS	<i>Department of Plant Protection and Quarantine Services</i>	<i>MoARD</i>	<i>Ministry of Agriculture and Rural Development</i>
DPV	<i>Département Protection des Végétaux (Department of Plant Protection)</i>	<i>NCDLC</i>	<i>National Desert Locust Control, Libya</i>
ELO	<i>EMPRES Liaison Officers</i>	<i>NOAA (US)</i>	<i>National Oceanic and Aeronautic Administration</i>
EMPRES	<i>Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases</i>	<i>NSD</i>	<i>Republic of North Sudan</i>
		<i>NSE</i>	<i>Nomadacris septemfasciata</i>
ETOP	<i>Emergency Transboundary Outbreak Pest</i>	<i>OFDA</i>	<i>Office of U.S. Foreign Disaster Assistance</i>
Fledgling	<i>immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully developed reproductive organs to breed</i>	<i>PHD</i>	<i>Plant Health Directorate</i>
		<i>PHS</i>	<i>Plant Health Services, MoA Tanzania</i>
		<i>PPD</i>	<i>Plant Protection Department</i>
		<i>PPSD</i>	<i>Plant Protection Services Division/Department</i>
GM	<i>GreenMuscle® (a fungal-based biopesticide)</i>	<i>PRRSN</i>	<i>Pesticide Risk Reduction through Stewardship Network</i>
ha	<i>hectare (= 10,000 sq. meters, about 2.471 acres)</i>	<i>QU</i>	<i>Quelea bird</i>
IRIN	<i>Integrated Regional Information Networks</i>	<i>SARCOF</i>	<i>Southern Africa Region Climate Outlook Forum</i>
IRLCO-CSA	<i>International Red Locust Control Organization for Central and Southern Africa</i>	<i>SGR</i>	<i>Schistoseca gregaria</i>
		<i>SWAC</i>	<i>South West Asia DL Commission</i>
		<i>TAG</i>	<i>Technical Assistance Group</i>
ITCZ	<i>Inter-Tropical Convergence Zone</i>	<i>Triangulation</i>	<i>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.</i>
ITF	<i>Inter-Tropical Convergence Front = ITCZ)</i>		
FAO-DLIS	<i>Food and Agriculture Organizations' Desert Locust Information Service</i>		<i>Usually FAO plays the third party</i>
Hoppers	<i>young, wingless locusts/grasshoppers (Latin</i>		

	<i>role in the case of locust and other emergency cases.</i>
USAID	<i>the United States Agency for International Development</i>
UN	<i>the United Nations</i>
ZEL	<i>Zonocerus elegans, the elegant grasshopper</i>
ZVA	<i>Zonocerus variegatus, the variegated grasshopper (This insect is emerging as a fairly new distractive dry season pest, largely due to the destruction of its natural habitat through deforestation, land clearing, for agricultural and other development efforts and from associated weather variability.)</i>

Who to Contact:

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