Emergency Transboundary Outbreak Pest (ETOP) Situation Report for March with a Forecast till mid-May, 2013

Summary

The Desert Locust (SGR[1]) situation improved in Sahel West Africa and Northwestern Africa in March. Only a few small swarms were controlled on some 3,690 ha in southern Morocco and western and central Sahara in Algeria during this period. On the other hand, the situation remained active in the Red Sea region and parts of the eastern Mediterranean region in Sudan, Egypt and Saudi Arabia and to some extent in Israel and Gaza Strip. Swarms were reported in Cairo, Sinai Peninsula, Gaza Strip, Negev Desert, Jordan and Lebanon in March. Egg laying occurred near cropping areas along the Nile River in Sudan, in Israel and Gaza Strip. A cumulative total of 68,537 ha were treated in these regions in March. The situation remained calm in other outbreak regions (CNLA/Chad, CNLAA/Morocco, DLCO-EA, DPPQS/India, FAO-DLIS, PPD/Oman).

Forecast: SGR activities will likely continue and more swarms and groups will appear in the winter breeding areas in Sudan and the Arabian Peninsula. Small-scale breeding is likely in Morocco and Algeria and cause locust numbers to increase slightly during the forecast period. Western Pakistan and southeastern Iran may experience small-scale breeding, but other countries will remain fairly calm during the forecast period. Vigilance and active surveillance remain necessary to avoid unexpected surprises (CNLA/Chad, CNLAA/Morocco, DLCO-EA, DPPQS/India, FAO-DLIS, PPD/Oman).

Other ETOPs

Red (Nomadic) Locust (*NSE*): NSE presence was reported in Tanzania, Malawi, Mozambique, and Zambia. Control operations were carried out against hoppers in Tanzania using Green Muscle from IRLCO-CSA and adult locusts were controlled with conventional pesticides (IRLCO/CSA).

Forecast: Fledglings and more 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): No update was received at the time this report was compiled, but, it is likely that locust activities continued in the primary outbreak zones and other areas. Last month, the national locust control center reported that 51,000 ha were surveyed and 28,000 ha were controlled since November/ December 2012 (DPV/CNA).

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 and substantial resources over the next months to break the continued

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

breeding cycle that could otherwise lead to a plague stage if ecological conditions remain favorable and the pest is left unabated.

Note: Considering the way the most recent LMC campaigns (2010-11 and 2011-12) were operated, which many experts view as pre-maturely terminated operations, and given the insufficient local capacity, and the ongoing locust situation, it is argued that a well thought out strategy should be put in place in time to avert the brewing potential threats to food security and livelihoods of vulnerable populations. Furthermore, such a strategy ought to embrace preventive and curative interventions that are amenable to the country's unique biodiversity and sensitive habitats (AELGA, FAO-ECLO). **End note.**)

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

Forecast: Locust activities will start as the weather condition improves and the temperatures begin rising. Given that massive eggs were laid in parts of the CAC region, active surveillance and monitoring remain critical to avert potential invasions (AELGA).

African Armyworm (AAW): Overall the situation AAW situation remained calm in the southern and south-central outbreak regions. However, the pest continues developing in the northern outbreak areas where positive trap catches were reported in Tanzania during this period. Late received information indicated that armyworm outbreaks destroyed more than 30,000 ha of maize crops in Lesotho (nearly a quarter of the countries maize fields) in January. Most of the plants that were affected were planted late, i.e., December and early January. The GoL launched aerial and ground operations to control the pest (DLCO-EA, IRLCO-CSA, UN/IRIN).

Forecast: AAW activities will remain fairly calm in the southern outbreak areas and the situation will gradually subside in Lesotho during the forecast period. However, the pest will likely continue being active in northern Tanzania, Kenya and perhaps Uganda. Some AAW activities may also begin appearing in southern Ethiopia during the forecast period (AELGA, DLCO-EA, IRLCO-CSA).

Quelea (QQU): QQU activities were reported in Tanzania and the pest was sighted attacking irrigated rice in Mozambique during this month (DLCO-EA, IRLCO-EA).

Forecast: As small grain crops mature in Kenya, Tanzania, Mozambique, Zimbabwe and other countries QQU outbreaks will likely occur. Active surveillance and timely reporting and interventions remain essential (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 advices as necessary. **End summary**

Progresses made 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 discussed the SGR operations and activities undertaken by member-countries in detail. Member countries underscored with the assistance from EMPRES WR program, the Regional Commission for the control of the SGR in the western and northwestern Africa, and multilateral support from development partners, particularly USAID, AfDB, France and FAO and other partners. Participants reviewed and deliberated on the proposed plans for the upcoming SGR outbreak seasons.

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

It is to be recalled that the SGR 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 also underscored the thoroughness of 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 these contributions are properly documented and reported as part of the June 2012 FAO Sahel locust appeal.

USAID's continued support to the EMPRES program and the assistance it has 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.

- OFDA supported DRR program aimed at strengthening national and regional capacities for ETOP operations in Central Asia and the Caucasus (CAC) is well underway. The program focuses on improving national and regional capacities to better coordinate locust monitoring and reporting as well as joint plans for mitigation and prevention to minimize the threats these pests pose to food security and livelihoods of vulnerable populations.

- OFDA supported activities of the three-year fixed obligation grant on scaling up community-based armyworm monitoring, forecasting and early warning are in progress. 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.

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.

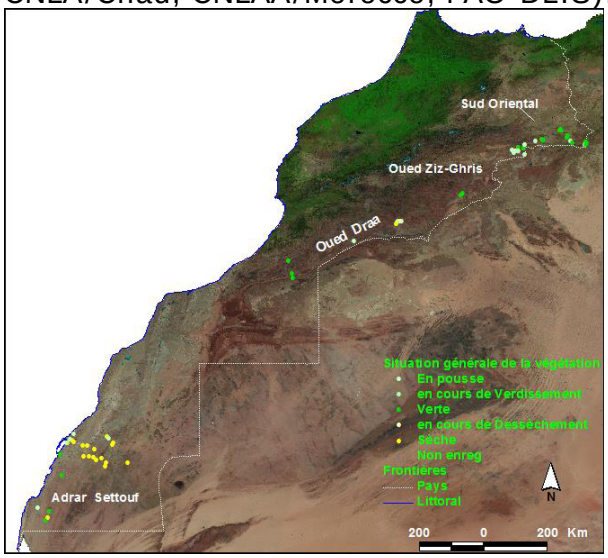
Weather and ecological conditions

The Intern Tropical Convergence Zone (ITCZ) over Africa was slightly inching northward, but is still situated south of the equator. The SGR outbreak areas in the western region remained fairly dry. On the other hand, moderate to light rains were recorded in the SRG central outbreak region, particularly in the interior of Saudi Arabia, Yemen, and Oman and in eastern Ethiopia as well as northern Somalia during March. The coastal areas in Egypt, Sudan, Eritrea, Saudi Arabia or Yemen did not receive substantive rain and vegetation has started drying out. The weather stations located near the NSE outbreak areas reported good rains, green vegetation and moist soil in most places a mélange of favorable conditions for breeding and development of NSE during the coming weeks. No meteorological information was received from CAC or other regions during this period (DLCO-EA, *FAO-DLIS,* IRLCO-EA, NOAA, PPD/Oman).

Note: *The changes in the weather patterns that contribute to ecological shift to 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.*

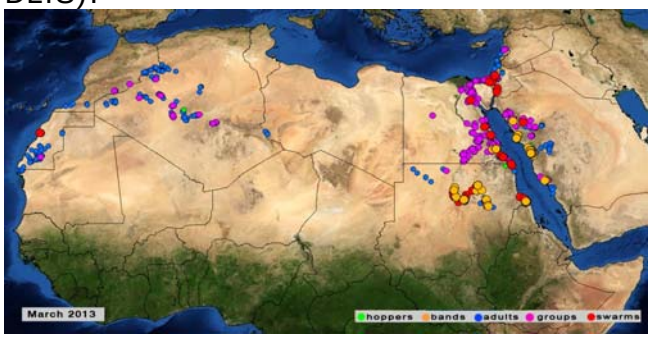
Detailed accounts of the ETOP situation and predictions for the next six weeks are presented henceforth.

SGR - Western Outbreak Region: The SGR situation continued improving in Sahel West Africa and Northwestern Africa in March. Only a few groups and small swarms were controlled on 781 ha in southwestern and southern Morocco and 2,910 ha were sprayed against immature swarms in central and western parts of the Sahara region in Algeria during this month. A few isolated adults were reported in northwestern Mauritania and southwestern Libya. Active surveillance and preventive and curative interventions remain essential to avoid unexpected devastating effects (AELGA, CNLA/Chad, CNLAA/Morocco, FAO-DLIS).



(Locust situation map for March, 2013, CNLAA/ Morocco)

Forecast: Small-scale breeding in southern and southwestern Morocco and central and western parts of the Sahara in Algeria will likely increase locust numbers, but overall significant development is not expected during the forecast period (CNLA/Chad, CNLAA/Morocco, FAO-DLIS).



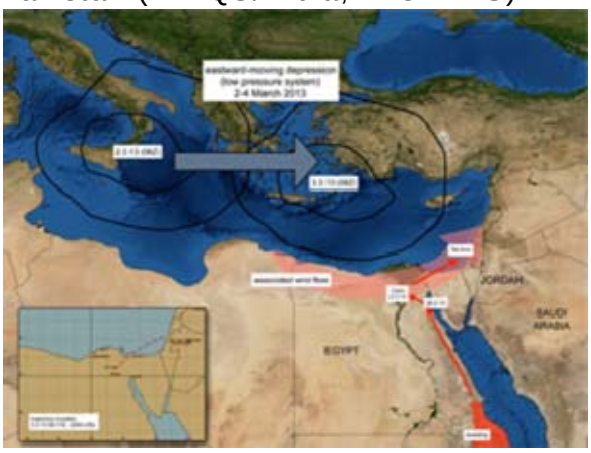
(DL along the Red Sea and east Med region in March, FAO-DLIS)

SGR - Central Outbreak Region: SGR continued developing in Sudan and Saudi Arabia. Swarms were reported in Cairo, Sinai Peninsula, Gaza Strip, Negev Desert, southern Jordan and Lebanon in March. Large-scale

breeding occurred near cropping areas along a long stretch from Wadi Halfa to Atbara in the Nile River area and control operations treated more than 44,948 ha during this month. In Egypt, groups of adults were reported near Lake Nassor, in the Red Sea Hills, east of Cairo and in the northern Sinai Peninsula and control operations treated more than 10,634 ha during this month. In Saudi Arabia, control operations continued against hoppers and adult groups on the Red Sea coastal plains north of Jeddah and south near Lith and treated more than10,939 ha. In Israel a swarm was first reported in Negev Desert on March 4th and controlled on 2,000 ha by ground and aerial. Some locusts were also reported breeding there. In Palestine, swarms were detected and controlled in 16 ha and adults were also seen breeding. In Jordan, one swarm was reported in the south on March 14th and low numbers of immature adults were reported in coastal areas in Lebanon on March 15th. No locusts were reported during surveys carried out in Oman, Ethiopia and no surveys were reported in other countries during this period (DLCO-EA, FAO-DLIS, PPD/Oman).

Forecast: More hoppers will appear in Sudan, Saudi Arabia, perhaps Israel and Palestine where egg laying was reported in March. Adult groups and swarms will form towards the end of the forecast period in May. In Sudan, swarms could threaten cropping areas along the Nile River. Eggs that were laid by adults that moved to northern Red Sea coast in Saudi Arabia will hatch and form hoppers. Spring breeding areas in the interior of Saudi Arabia and Yemen may also witness breeding that will eventually lead to swarm formations within the next months (DLCO-EA, FAO-DLIS).

SGR - Eastern Outbreak Region: No locusts were reported in India and scattered adults may have been present in March in southeastern Iran and western Pakistan (DPPQS/India, FAO-DLIS).



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

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

Red (Nomadic) Locust (NSE): Groups and swarms of immature adult NSE were reported in Iku/Katavi in Tanzania, Lake Chilwa/Lake Chiuta Plains in Malawi/Mozambique, Dimba and Buzi-Gorongosa plains in Mozambique as well as Kafue Flats in Zambia in March. Hoppers were controlled in Tanzania with Green Muscle provided by the IRLCO-CSA. Control operations were in progress against adults in Iku/Katavi plains at the time this report was compiled. 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 (Note: 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) (IRLCO-EA).

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).

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

Forecast: As the rainfall continues diminishing in most of the NSE outbreak areas, vegetation will dry out and force locusts to concentrate and form groups and swarms. In addition, the seasonal grass burning that will follow the beginning of the dry season will force locusts to concentrate in patches of green vegetation and form swarms. Although control operations that are being carried out by MoA/Tanzania, FAO and IRLCO-CSA will reduce the threats the locusts pose to vulnerable populations in the Iku/Katavi outbreak areas, it remains crucial to address those in Lake Chilwa/Lake Chiuta in Malawi, Buzi–Gorongosa and Dimba in Mozambique and Kafue Flats in Zambia outbreak areas where ecological conditions are favorable for locusts to further develop and threaten crops and food security of vulnerable populations. IRLCO-CSA intends to conduct survey operations in the outbreak areas to assess the locust situation and determine the needs for interventions (IRLCO-CSA).

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

LMC: No update was received at the time this report was compiled, but, it is likely that locust activities continued in the primary reproduction zone and in other areas. It is to be recalled that last month, the national locust control center reported that 51,000 ha were surveyed and 28,000 ha were controlled as of the start of the seasonal rains in the 4th quarter of 2012. It also mentioned that 2,000 ha of NSE were treated during that time (DPV/CNA).

Forecast: LMC activities will continue and swarms and hoppers will appear in several places during the current outbreak season. The second generation breeding was in progress as of previous month and the 3rd generation was expected to begin as of the end of March.

DPV/CNA anticipates control operations to require hundreds of thousands of liters of pesticides and substantial amount of resources over the next months.

A late received report indicated that medium to high density (40 - 500 insects/m ^{2}) 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.

NSE: No update was received on NSE in Madagascar in March, but as reported previously the presence of favorable conditions in the Sofia basin will escalate the development of NSE. The synergy between the Malagasy and the NSE (red/nomadic) locust could exacerbate the situation (AELGA).

Note: Considering the most recent campaign operations which were viewed by some

technical experts as pre-maturely disrupted 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 the potentially serious breeding/outbreak seasons to abate imminent threats the locusts pose to food security of vulnerable communities (AELGA, FAO-ECLO). **End note.**)

UN/FAO in close collaboration with MoA/Madagascar has developed three year - medium to long-term- programs to address the recurring locust problems in the country. The document has been circulated and comes at an estimated cost of USD 41.5 million. The program anticipates to treat and/or protect more than 2.15 million ha over the next three years (AELGA, FAO).

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

(Locust prone CAC countries, FAO)

Forecast: As spring weather begins heralding and the temperatures begin rising DMA and LMI will begin appearing. Extensive hatching and significant numbers of LMI hoppers are likely during this breeding season, particularly 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 (the ground is moist but not heavily flooded) in the flood plains, the region could experience extended invasions for months to come (AELGA, FAO-AGPM).

Australian Plague Locust (APL): No update was available for March 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 that formed from in previous months may have further developed and some fledged in Southwest and Central West Queensland where heavy rains fell in January (AELGA, APLC).

(Australian plague locust, source: APLC)

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

African Armyworm (*AAW*): the AAW situation remained calm in the southern and south-central outbreak regions. However, the pest continues developing in the northern outbreak areas where positive trap catches were reported in Tanzania during this period. A late received report indicated that AAW infestations occurred in January and February in Lesotho

where some 30,000 ha or 25% of the country's maize crops were destroyed, mainly those that were planted in December and early January, i.e., late in the season. Aerial and ground control operations were launched with the assistance from the Gold. A helicopter was hired from South Africa at a cost of USD 444,000 and ground operations were carried out in mountainous areas that are inaccessible by ground means (DLCO-EA, IRIN, IRLCO-EA, PHS/Tanzania).

Forecast: AAW activities will remain fairly calm in most of the southern outbreak areas but will situation will gradually subside in Lesotho during the forecast period. However, the pest will likely remain active in northern Tanzania, Kenya and perhaps Uganda. Some AAW activities may also begin appearing in southern Ethiopia during the forecast period (AELGA, DLCO-EA, IRLCO-CSA).

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

Quelea (QQU): QQU activities were reported in Singida, Shinyanga and Mbeya regions in Tanzania and the pest was sighted attacking irrigated rice farm in Mozambique (DLCO-EA, IRLCO-EA).

Forecast: QQU outbreaks will likely occur in Kenya, Tanzania, Mozambique, Zimbabwe and other countries as small grain crops mature. Active surveillance and timely reporting and interventions remain essential (AELGA, DLCO-EA, 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.*

***Cataloipus* sp.:** Additional information was not received on *Cataloipus* species that was reported causing damage to maize in Buzi plains in Mozambique in February and ground control operations were carried out by farmers with assistance from the Ministry of Agriculture.

Rodents: No rodent outbreaks were reported during March.

Forecast: As rodents remain a constant threat to cereal and other produces in many outbreak and invasion areas, active surveillance and preventive interventions remain essential (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 slightly in March due to control operations in Algeria, Egypt, Morocco, Saudi Arabia, Sudan, Israel and Gaza Strip/Palestine (Algeria = 2,910, Morocco = 781, Sudan = 44,948, Egypt = 10,634, Saudi = 10,939, Israel = 2,000 and Gaza Strip/Palestine Strip = 16).

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 pesticide stocks from countries with large inventories to where there are immediate needs is a win-win 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	1,197~
Chad	43.9
Eritrea	43.7~
Egypt	Data not available
Ethiopia	1.6+~
Libya	25
Madagascar	Data not available
Mali	208.8d~
Mauritania	161.6+~
Morocco	4,099~
Niger	45.00~
Oman	20
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
l = Mali donated 21,000 l for RL in Malawi, ozambique 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 e**x**pempta - 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*
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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	*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 developed reproductive organs and hence cannot breed*
GM	*Green Muscle (a fungal-based biopesticide)*
ha	*hectare (= 10,000 sq. meters, about 2.471 acres)*
	Integrated Regional Information Networks
IRLCO-CSA	*International Red Locust Control Organization for Central and Southern Africa*
ITCZ	*Inter-Tropical Convergence Zone*
ITF	*Inter-Tropical Convergence Front = ITCZ)*
FAO-DLIS	*Food and Agriculture Organizations' Desert Locust Information Service*
Hoppers	*young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)*
Hopper bands	*groups of hoppers aggregated and marching in unison and pretty much in the same direction*
Kg	*Kilogram (~2.2 pound)*
L	*Liter (1.057 quarts or 0.264 gallon or 33.814 US fluid ounces)*
LMC	*Locusta migratoriacapito*
LMM	*Locusta migratoria migratorioides (African Migratory Locust)*
LPA	*Locustana pardalina*
MoAFSC	*Ministry of Agriculture, Food Security and Cooperatives*
MoARD	*Ministry of Agriculture and Rural Development*
NOAA	*National Oceanic and Aeronautic Administration*
NSD	*Republic of North Sudan*
NSE	*Nomadacris septemfasciata*
OFDA	*Office of U.S. Foreign Disaster Assistance*
PHD	*Plant Health Directorate*
PHS	*Plant Health Services, MoA Tanzania*
PPD	*Plant Protection Department*

PPSD	*Plant Protection Services Division/Department*
PRRSN	*Pesticide Risk Reduction through Stewardship Network*
QQU	*Quelea quelea*
SARCOF	*Southern Africa Region Climate Outlook Forum*
SGR	*Schistoseca gregaria*
SWAC	*South West Asia DL Commission*
TAG	*Technical Assistance Group*
USAID	*Unites States Agency for International Development*
UN	*the United Nations*
ZEL	*Zonocerus elegans, the elegant grasshopper*
ZVA	*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.)*

Point of Contact:

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To learn more about our activities and programs, please, visit us at:

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