

**Emergency Transboundary
Outbreak Pest (ETOP) Situation
Report for January with a
Forecast till mid-March, 2011**

Summary

The **Desert Locust (SGR¹)** situation remained serious in January in Sudan, Saudi Arabia and Mauritania where control operations targeted hoppers and groups of adults. More than 14,000 ha were treated in Mauritania during this month and close to 5,000 ha were sprayed in December. Some 10,000 ha were sprayed in Sudan and Saudi Arabia where swarms were detected. Egypt treated some 382 ha during this period and an updated figure for December operations for Yemen was 1,450 ha. Small-scale infestations were reported in southern Morocco where 55 ha were treated and insignificant numbers of solitary adults and hoppers were also detected in Sahara region in Algeria. A few solitary adults were reported in spring breeding areas in Baluchistan, western Pakistan. Other countries remained relatively calm during this period (CNLA/Mauritania, CNLAA/Morocco, DDLC/Libya, DLMCC/Yemen, DPPOS/India, DPV/Tunisia, FAO-DLIS, INPV/Algeria, PPD/Ethiopia and PPD/Sudan).

Forecast: Locust numbers will continue increasing along both sides of the Red Sea coast and form small swarms and groups and move to the interior of Saudi Arabia during the forecast period. Groups and swarms could also form in

¹ Definitions of all acronyms can be found on the last pages of this report.

northern Mauritania and southern Morocco and move to spring breeding areas in the southern side of the Atlas Mountains. Breeding could commence in both areas as it starts getting warmer and wetter in spring. Vigilance must be maintained and survey and control operations continued in the aforementioned outbreak countries and prevent locust movements to spring breeding areas. Other countries will likely remain calm during the forecast period (CNLA/Mauritania, CNLAA/Morocco, DDLC/Libya, DLCO-EA, DPPOS/India, DPV/Tunisia, FAO-DLIS, INPV/Algeria, PPD/Ethiopia and PPD/Sudan).

Other ETOPs

Red Locust (NSE): The *NSE* situation remained calm in January in most outbreak areas except in North Rukwa plains where fishing communities near Lake Rukwa reported the presence of hoppers. Ecological conditions in outbreak areas were favorable for breeding and survival of the pest and could lead to the formation of fledglings and swarms. Active surveillance and monitoring are essential (IRLCO-CSA).

Madagascar Migratory Locust (LMC): Adult locusts and hoppers were observed in Befandriana South, Basibasy, Mahafaly, Fiherenana, Sakaraha and Fotadrevo during the past dekads. Breeding was detected in lowland areas in Tuléar and near the mouth of Mangoky River in January. Locusts were also observed in Bekily-Fotandrea and the Vineta/Sakara plateaus and hatching was reported on the Mahalafay plateau where early instar hoppers were observed earlier in the month. Aerial control operations treated 1,200 ha in Basibasy during the second dekad of the month (FAO-CNA).

Forecast: Ecological conditions will continue improving and breeding will progress and locust numbers will increase in areas of recent rainfall in the south, southwest to Bakily-Fotadrevo, Bakily-Fotadrevo, Fotandrevo, Mahalafay, Nineta/Sakara, Befandriana south, Mikea and lowlands of Tulear during the forecast period. Active surveillance, monitoring and [aerial and ground] control interventions remain critical in the primary outbreak and invasion areas in the coming months.

The United States Agency for International Development through the Office of US Foreign Disaster Assistance has responded favorably to an appeal issued by the UN/FAO on behalf of the GoM. European Commission, Switzerland and France have also pledged assistance and it is anticipated that other donors and partners will follow suit.

Moroccan (DMA), Italian (CIT) and Migratory (LMI) locusts: No update was received at the time this report was compiled and significant activities are not expected during the forecast period.

The Elegant grasshopper, ***Zonocerus elegans (ZEL)*** was reported damaging maize and sorghum in Gorongosa, Nhamatanda and Caia districts of Sofala province in Mozambique where an estimated 1,200 ha was sprayed with a pesticides.

Armyworm (AAW): AAW outbreaks continued in Mozambique, Tanzania and

Zimbabwe where the pest was reported attacking rice, sorghum and pasture. Control was carried out by farmers with technical and material assistance from the Ministries of Agriculture (IRLCO-CSA). Vigilance should be maintained by trap operators, crop protection staff, lead farmers, including community-based forecasters and the situation reported to appropriate bodies (AELGA, DLCO-EA, IRLCO-CSA).

Quelea (QQU): In Kenya, QQU birds were reported attacking sorghum in Kibwezi district of the Eastern Province and Narok district in the Rift Valley. Aerial control was carried out by the Ministry of Agriculture in collaboration with the Desert Locust Control Organization of East Africa (DLCO-EA). Flocks of QQU populations were detected around Kapunga rice seed farm in Mbarali district in Mbeya region in Tanzania. A QQU colony was located in 186 ha in Chokwe district in Gaza province of Mozambique and is being monitored (IRLCO-CSA).

OFDA/AELGA (Assistance for Emergency Locust and Grasshopper Abatement) will continue monitoring ETOP situations in all regions and issue updates and advices as often as necessary. End summary

Progress 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 DL activities.

Funds provided by the African Development Bank, the World Bank, USAID, France, FAO, host-governments, neighboring countries and others enabled the FCs to equip CNLAs with necessary tools, materials and infrastructure as

well as help train staff and technicians to prevent and respond to DL outbreaks and avoid the threats they pose to food security and livelihoods of vulnerable communities.

CNLA's ability to avert, respond to and mitigate devastating DL outbreaks and invasions need to be encouraged and supported.

OFDA ETOP Activities

- OFDA/TAG continues its initiatives in pesticide risk reduction through stewardship network (PRRSN) to help prevent pesticide related disasters and ensure safety of vulnerable people as well as protect their assets and the environment against pesticide pollution. OFDA/TAG has so far successfully launched two sub-regional PRRSNs in Eastern Africa and the Horn. Discussions are underway to launch similar initiatives in North Africa, Western Africa and the Middle East. Potential partners will be approached in Eastern Europe, Central Asia, the Caucasus as well as the LAC regions where OFDA/TAG intends to introduce similar initiatives.
- OFDA continues its support for capacity strengthening through FAO to mitigate, prevent and respond to DL emergencies and associated human health risks and environmental pollution.
- OFDA contributed to FAO's initiative to strengthen national and regional capacities in Central Asia and the Caucasus (CAC) to help coordinate locust monitoring, reporting as well as interventions among neighboring countries. The ultimate goal of the

initiative is to prevent and mitigate locust threats and improve food security and livelihoods of vulnerable communities. OFDA will continue its support for these initiatives.

All SITREPs can be accessed on our website at:

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

Weather and ecological conditions

During the third dekad of January, sections of the Zambezi river basin, including central Mozambique and much of Zimbabwe continued to receive substantial rainfall amounts. Extremely heavy rains soaked northwestern Madagascar with amounts exceeding 200 mm and the rest of the country also received substantial amounts of rainfall. North-central Namibia and western Botswana also remained wet. Rainfall was below average across parts of southern and northern Mozambique, and much of Tanzania.

During the second dekad of January, heavy rains soaked the northern tip of Madagascar and the Zambezi river basin in the areas including southern and central Mozambique, Zimbabwe, northern Botswana, Zambia, and Tanzania. Rainfall totals exceeded the climatological mean by 50 to 100 mm in the southern sectors of Zimbabwe and Mozambique, and in northern Madagascar. However, eastern central Madagascar remained fairly dry during this period.

Rainfall was below average over most areas in the Maize Triangle of South Africa, northern Angola, and most areas in central Africa (NOAA). Above normal rainfall was recorded in southern areas of Malawi, near Lake Chilwa/Lake Chiuta Red Locust outbreak areas. Rainfall was recorded in and around NSE outbreak areas as of November last year allowing grass re-growth to fully establish

during the reporting period. Early flooding was absent in most of the outbreak areas and breeding conditions continued to be favorable.

Note: *Changes in the weather pattern and the shift in the ecology of landscape are believed to exacerbate the risk of pest outbreaks and resurgence. Regular monitoring and reporting are essential.*
End note.

Detailed accounts of ETOP situation, activities and ecological and weather conditions across various regions are presented below.

SGR - Western Outbreak Region

The **Desert Locust (SGR)**: Groups of immature and mature adults mixed with concentrations of hoppers were present in Adrar, Inchiri and Dakhlet Nouadhibou in the northwestern and northern Mauritania where intense operations were carried out. Low-density mature and immature solitary and transient adults and 3rd to 5th instar hoppers were observed in southeast Adrar where laying and hatching were reported. Mature low-density adults mixed with 4th and 5th instar hoppers were detected in Inchiri and winged mature and immature solitary and transient adults were observed in Tabrenkout. In Dakhlet Nouadhibou, low density hoppers and immature and mature adult populations were observed and in Tiris Zemmour, winged mature and immature adults were dispersed.

A total of 14,045 ha were treated during the first two dekads of January and more than 19,518 ha have been sprayed (~5,000 in December) since the current control operations commenced on 23rd October, 2010. CNLA predicts that some 50,000 ha may need treatment during the

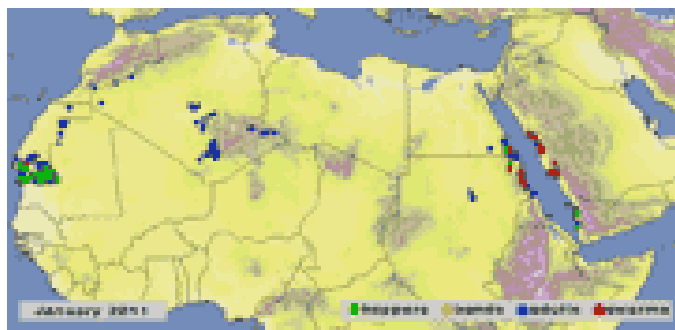
course of this campaign. In Morocco, extensive survey was conducted from 6-16 December in Dakhla between Bir Anzarane, Awsserd, Tichla and Bir Gandouz. Mature and maturing isolated and solitary adults were observed in some localities where conditions were favorable. Solitary to transient 1st -3rd and 5th instar hoppers were detected on 10 to 100 ha at different sites. Control operations treated some 55 ha in southern Morocco during this period. In Algeria seven survey and control teams covered Tamanrasset, Illizi, Adrar, Béchar and Tindouf and detected insignificant numbers of solitary mature adults and hoppers North and South of Hoggar and around of Djanet in the Wilaya d' Illizi. Environmental conditions were becoming unfavorable in Sahara, southern and central regions of the country due to the absence of significant rains during this period. No locusts were reported in other countries in the region during this period (CNLA/Mauritania, DDLC/Libya, DPV/Tunisia, FAO-DLIS and INPV/Algeria).

Forecast: Given the continued presence of locusts in Adrar, Inchiri, and Dakhlet Nouadhibou and particularly in Graras and at Wadis in northwestern and northern parts of the country where ecological conditions are fairly favorable in some localities, there is a likelihood of locust numbers increasing during the forecast period. Fledging and concentrations of adults will likely occur in some areas in northern and northwestern Mauritania. Adults and hoppers will likely appear in areas where environmental conditions are favorable in Awsserd southern Morocco.

Adult groups and small swarms will likely move north into spring breeding areas in the southern side of the Atlas Mountains in Morocco and Algeria and likely begin breeding with the onset of the rains. Other countries in the western region will likely remain calm during the forecast period (CNLA/Mauritania, CNLAA/Morocco, DDLC/Libya, DPV/Tunisia, FAO-DLIS and INPV/Algeria).

SGR - Central Outbreak Region

The SRG situation continued being a concern in January in Sudan and Saudi Arabia. Adult swarms and hopper bands were controlled in more than 7,058 ha in Sudan in January and close to 2,800 ha were sprayed on the Red Sea coasts in Saudi Arabia.



(Locust situation in January, FAO-DLIS)

Solitary and gregarious late instar hopper groups and immature and mature adults were reported in Tokar Delta during the first week of January. Rains fell on January 5, 6 and 7 in the surveyed areas along the Red Sea coast. More than 29,270 ha were surveyed during the first week of the month of which close to 1,900 ha were reported infested. Adult swarms and hopper bands were controlled on more than 1,700 ha by air and ground means in the North and Red Sea States in Sudan during the first week of the month.

Solitary and gregarious late instar hopper groups and immature and mature adults were reported in Tokar Delta during the first week of January. Rains fell on January 5, 6 and 7 in the surveyed areas along the Red Sea coast (PPD/Sudan). Small-scale breeding occurred in southeastern Egypt where 382 ha were sprayed during this period. Small-scale breeding occurred on the Red Sea coast of Yemen where control operations treated close to 1,450 in December. No locusts were reported in other countries in the region

(DLMCC/Yemen, FAO-DLIS, PPD/Ethiopia, and PPD/Sudan)

Forecast: Breeding will continue in Sudan, Saudi Arabia and Yemen and likely form small swarms and groups that will later on move to spring breeding areas in the interior of Saudi Arabia. Vigilance is required to avoid movement of swarms and groups to spring breeding areas. Other countries in the region will likely remain calm during the forecast period (DLMCC/Yemen, FAO-DLIS, AELGA, PPD/Ethiopia and PPD/Sudan).

SGR - Eastern Outbreak Region

Locust numbers continued declining in January in the summer breeding areas along the Indo-Pakistan borders and only very few adults were reported in spring breeding areas in Baluchistan western Pakistan (DPPQS/India, FAO-DLIS).

Forecast: Small-scale breeding will likely occur in Baluchistan, western Pakistan and adjacent areas in southern Iran following the spring rains. Nevertheless, locust numbers will likely remain low during the forecast period (FAO-DLIS).

Red Locust (NSE): *NSE* situation remained fairly calm in January in most outbreak areas except in North Rukwa plains where fishing communities near Lake Rukwa reported the presence of hoppers. Residual parental populations may have also given rise to hoppers in North Rukwa and other outbreak areas in Tanzania; Lake Chilwa/Lake Chiuta of Malawi; Dimba and Buzi plains of Mozambique and in Kafue Flats of Zambia.

Forecast: It is likely that hoppers have been present in most outbreak areas where ecological conditions were favorable and breeding may have taken place. Fledglings are expected to appear by late March to April. IRLCO-CSA will carry out survey in all outbreak areas from February on and launch control operations in areas of high concentrations thereafter.



Adult NSE mating/laying eggs in Ikuu plains, Tanzania; 4th December, 2010 (IRLCO-CSA)

GreenMuscle will be used in ecologically sensitive areas. Active surveillance and monitoring are essential particularly in areas North Rukwa plains, Wembere and Ikuu-Katavi with main focus on areas closer to crop fields (IRLCO-CSA).

Madagascar Migratory Locust (LMC):

During the second dekad of January, concentrations of locust populations were detected in the transitional breeding and multiplication areas. Low to medium density 1st to 5th instar hoppers were observed in several places in the lowland areas in Befandriana South and in Basibasy, the Mahafaly, the high basin of Fiherenana, in Sakaraha, and Fotadrevo.

Gregarious individuals, immature adults and groups of mature adults were also seen breeding in lowland areas in Tuléar and the mouth of Mangoky. Control operations treated hoppers and bands in 1,200 ha in the lowlands of Basibasy by air during the second dekad of January. Control operations will continue in Sakaraha, Fotadrevo and tray Mahafaly. Winged populations and 1st and 2nd instar hoppers were observed in the lower parts of Befandriana South and adults were also detected on *Cynodon dactylon* in Baibasy at 6,300 individuals/ha during the first dekad of the month. Winged locusts were also observed in Bekily-Fotandrevva and the

Vineta/Sakara plateaus and hatching was reported on the Mahalafay plateau where low density 1st and 2nd instar hoppers were observed. Adults were reported in the lowlands of Tulear at 400-700 insects/ha near Fiherenana. 107,800 l of conventional pesticides and 18,000 l and 600 kg of an insect growth regulator and a biopesticide (GreenMuscle) are strategically placed by FAO and CNA for the on-going campaign (Kamara, FAO-CNA bi-weekly).

Forecast: With the rains predicted to persist and ecological condition continue improving, breeding numbers will be increasing in the south, southwest to Bakily-Fotadrevo and other areas in the region. Aerial survey and control operations will need to be intensified in Fiherenana, Fotadrevo and Mahafaly, in Ilempo.

The two helicopters assisting survey and control operations have logged in close to 359 hours as of the end of the second dekad of January and are expected to continue operations. Aerial operations that began in mid-October with the first control operation launched on November 28th will continue in the primary outbreak and invasion areas. Pre-positioning conventional pesticides (107,800 l), insect growth regulator (18,000 l), a biopesticide (GreenMuscle) (600 kg) as well as equipment and materials in strategic locations in the aforementioned areas will continue.

CNA and DPV must remain vigilant and continue monitoring and reporting of areas where egg laying has occurred and locust developments have been detected or will be likely occur must be reported and responded to as rapidly as possible.

OFDA/TAG will continue monitoring the situation in close collaboration with FAO, CNA and other partners and issue updates and advise as often as necessary.

Moroccan (DMA), Italian (CIT) and Migratory (LMI) locusts in CAC. No update was received on these pests at the time this report was

compiled and no locust activities are expected in the region during this time.



(Locust prone CA countries, FAO)

Australian Plague Locust (APL): A late received report indicated that increased swarm activities continued in several outbreak and invasion areas in Australia during December. Intense egg laying was reported near the Murray River by mid-December and hatching from eggs laid in the first half of December commenced at the start of January in northern Victoria and the Riverina and a second generation of high density nymphs and hopper bands occurred during January.

High density adults and swarms were recorded in New South Wales during December and dense swarms were seen laying in the Riverina and adjacent areas by mid-December. Fledging and swarm formations continued in northern Victoria at the start of December and late instar hopper bands were active in areas south of Swan Hill and Echuca. Many swarms developed in North Central and Northwest Victoria followed by a widespread egg laying.

Forecast: The unusually heavy rains that occurred in several regions of western Queensland and New South Wales during summer are expected to create favorable conditions for a widespread breeding and a

significant population increase in 2011 (APLC)



(Australian plague locust, source: APLC)

The Timor and South Pacific: No update was received in January.

The Elegant grasshopper, *Zonocerus elegans* (ZZE) was reported damaging maize and sorghum in Gorongosa, Nhamatanda and Caia districts of Sofala province in Mozambique where an estimated 1,200 ha were sprayed with a pesticide. Another grasshopper species was also reported attacking maize in Chemba district of Sofala province.

African Armyworm (AAW): AAW caterpillars were reported attacking maize and pasture in Newalla and Masasi districts of Mtwara Region and in several villages in Lindi Region and Mvomero and Kilosa districts of Morogoro Region in southern and central Tanzania, respectively. Control operations were carried out with pesticides and technical support from the Ministry of Agriculture. Gorongosa, Nhamatanda, Caia, Buzi, Gondola and other areas in central Mozambique experienced armyworm attacks. The pest was seen damaging corn, rice and millet on some 1,700 ha and control operations were launched by farmers using pesticides from the Ministry of Agriculture staff.

In Zimbabwe, armyworm started in December and continued infesting central, western and eastern provinces of Mashonaland where some 5,130 ha of cereal crops and 1,683 ha of pasture sustained mild to severe damage. Affected farmers controlled the pest using Carbaryl supplied by the Ministry of Agriculture.

No AAW was reported in Kenya or other outbreak countries (IRLCO-CSA).

Forecast: AAW infestations are expected to continue in February in the Southern region of Tanzania and spread to Central, Coastal and Western regions and threaten crops and pasture. There is also a high probability that moths could migrate to the coastal and eastern parts of Kenya. Active surveillance and monitoring are essential and trap operators must maintain vigilance and report moth catches as soon as possible. AAW season is expected to come to an end in the southern Africa outbreak region in March/April as rainfall winds down (AELGA, DLCO-EA, IRLCO-CSA).

Quelea (QQU): A breeding QQU colony was detected by MoA over 186 ha of Acacia vegetation in Chokwe district of Gaza province in the southern part of Mozambique. The bird is posing a threat to irrigated rice at Chokwe Irrigation Scheme remains at risk. In Kenya, QQU was reported attacking sorghum in Kibwezi district of the Eastern Province and Narok district in the Rift Valley. Aerial control was carried out by the MoA in collaboration with DLCO-EA.

In Tanzania, flocks of QQU populations were detected around Kapunga rice seed farm in Mbarali district in Mbeya region. Although the pest has not caused any damage yet, MoA is mobilizing resources to prevent any threats it poses to the crop (ITLCO-CSA, MoA).



(A QQU roost, a file photo; free encyclopedia)

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 colony composed of a million birds (very common) is capable of consuming and destroying 7-10 tons of seeds/day (enough to feed 15,000-20,000 people for a day).

Rodents: No rodent outbreak or infestation was reported during this month, but the pest remains a threat to both pre- and post-harvest crops and produces.

A large number of raptor birds such as barn owl, Tyto alba and other animals are nature's biological control agents that often contribute to the balance between outbreaks and a period of lull.

Front-line countries are advised to remain vigilant. Countries in the invasion zones should maintain the capacity to 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.

Acridid Pesticide Stocks

With the exception of control operations launched in Mauritania, Morocco, Saudi Arabia, Sudan and Yemen, the existing pesticides stocks were not affected significantly in January. The likelihood of some of the pesticides listed in the below box becoming obsolete increases as time goes by. Mindful of this phenomenon, ETOP-prone countries, particularly those with large stocks and less likely to use them within a reasonable time, are encouraged to test their stocks regularly and determine whether they should retain, use, share or discard them immediately. All options should be explored to avoid huge environmental and financial burdens associated with handling and disposing of large stocks of obsolete pesticides.

Judiciously executed triangulations of stocks from countries with large inventory to where the need

exists are a double-edged alternative that is worthwhile considering.

Note: The core message of **pesticide stewardship [networking]** is to strengthen the national and regional pesticide delivery systems by linking partners at the national, regional and trans-regional levels and thereby reduce pesticide related health risks, avoid environmental pollution, improve food security and ultimately contribute to the national economy. **End note.**

Country	Quantities in '000l/kg ^{\$}
Algeria	1,800~
Chad	108.09~
Eritrea	44.80~
Ethiopia	15.780
Libya	Data not available
Madagascar	107.8c + 18g + .60b
Mali	209d~
Mauritania	460.042~
Morocco	4,105~
Niger	28.24+
Senegal	519~
Saudi Arabia	Date not available
Sudan	873.96"
Tunisia	167.60~
Yemen	39.50 + .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-DL campaign was tested for quality and found to be usable through 2012

^m 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 (<i>Spodoptera expempta</i> - SEX)
AELGA	Assistance for Emergency Locust Grasshopper Abatement
AME	<i>Anacridium melanorhodon</i>
APL	Australian Plague Locust
APLC	Australian Plague Locust Commission
CAC	Central Asia and the Caucasus
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/CNLAA	Centre National de Lutte Antiacridienne (National Locust Control Center)
CRC	Commission for Controlling Desert Locust in the Central Region
CTE	<i>Chortoicetes terminifera</i>
DDLC	Department of Desert Locust Control
DL	Desert Locust
DLCO-EA	Desert Locust Control Organization for Eastern Africa
DMA	<i>Dociostaurus maroccanus</i>
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
GM	Green Muscle (a fungal-based biopesticide)
ha	hectare (= 10,000 sq. meters, about 2.471 acres)

IRIN	<i>Integrated Regional Information Networks</i>
IRLCO-CSA	<i>International Red Locust Control Organization for Central and Southern Africa</i>
ITCZ	<i>Inter-Tropical Convergence Zone</i>
ITF	<i>Inter-Tropical Convergence Front = ITCZ)</i>
FAO-DLIS	<i>Food and Agriculture Organizations' Desert Locust Information Service</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>
NSE	<i>Nomadacris septemfasciata</i>
OFDA	<i>Office of U.S. Foreign Disaster Assistance</i>
PHD/S	<i>Plant Health Directorate/ Services</i>
PPD	<i>Plant Protection Department</i>
PPSD	<i>Plant Protection Services Division/Department</i>
PRRSN	<i>Pesticide Risk Reduction through Stewardship Network</i>
QQU	<i>Quelea quelea</i>
SGR	<i>Schistoseca gregaria</i>
SWAC	<i>South West Asia DL Commission</i>
TAG	<i>Technical Assistance Group</i>
USAID	<i>Unites States Agency for International Development</i>
UN	<i>the United Nations</i>
ZEL	<i>Zonocerus elegans, elegant grasshopper</i>

To learn more about our activities and the programs we support, please, visit our website at:

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

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