



# DLCO-EA QUARTERLY NEWSLETTER

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## Contents

<b>Research on Impact of Climate Change on Population Dynamics of Desert Locust -----</b>	<b>1</b>
<b>Research on Integrated Pest Management (IPM) for the control of Desert Locust-----</b>	<b>2</b>
<b>Migratory Pests Situation-----</b>	<b>3</b>
<b>Activities on Community Based Desert Locust Monitoring and Reporting -----</b>	<b>5</b>
<b>Inter-Regional Workshop on the use of RAMSES. -----</b>	<b>5</b>
<b>Aircraft Sitrep -----</b>	<b>7</b>

### RESEARCH ON THE IMPACT OF CLIMATE CHANGE ON THE POPULATION DYNAMICS OF DESERT LOCUST *Schistocerca gregaria* (Forskål)

The current DLCO-EA research activities focused on Impact of Climate change on the (i) Population Dynamics of Desert Locust *Schistocerca gregaria* (Forskall) (ii) Integrated Pest Management (IPM) Reinmet of the Barrier treatment using different Bio-agents for the control of Desert Locust hopper bands. The results of the two programs which were conducted at Red Sea of Sudan are summarized below.

The Desert Locust *Schistocerca gregaria* Forskål (Orthoptera: Acrididae) is one of the most known serious pests in the World. Its importance comes from being

able to reproduce and multiply rapidly if the environmental and climatic conditions are favorable. In this study the results of correlation and regression analysis of the weather, and ecological data, with presence and absence of the Desert locust showed non-significant correlations, particularly when whole data (for the last 30 years) were processed as a one unit. Then the data were classified into three decades. The first decade is from 1984-1993, second decade 1994-2003, and the third decade 2004-2014.

The maximum temperature and Vegetation status showed significant correlation with locusts' activities. The impact of temperature and rainfall when directly correlated with the locusts showed non-significance. This was mainly attributed to the variation among the mean temperature and rainfall records which were obtained from metrological stations, and that may not reflect the exact conditions where locust were reported. However, the impact of the rainfall was reflected on the vegetation status. The model developed in this study incorporated two factors the vegetation status and maximum temperature factors on the presence and absence of the Desert Locust under the current conditions and under future warming conditions.

It is to be concluded that the potential impact of temperature cannot be separated from the rainfall, hence any increase in locust number depends on the combined effects of both temperature

and rainfall and must be evaluated together since successful breeding requires both components.

Also in this study the effect of the wind was clearly verified. However, any changes in wind speed, direction are likely to affect Desert Locust migration, breeding and development.



**Dr. Osman interviews locust farmer in Tokar Delta about Desert Locust**



**Foot transect for assessment of the locust density in the trail area**

**RESEARCH ON INTEGRATED PEST MANAGEMENT (IPM) FOR THE CONTROL OF DESERT LOCUST (*Schistocerca gregaria* (Forskål)) HOPPER BANDS:**

The most effective barrier pesticide such as Dieldrin which was used in the past

for the control of hopper bands of the Desert Locust *Schistocerca gregaria* (Forskål) was banned due to its high toxicity and human health concerns. The current control so far depends heavily on overall spraying of the poisonous chemical pesticides that require repeated applications which poses a severe environmental pressure on the desert locust habitat. To minimize such consequences, it is essential to enforce the IPM programs in locust management by refining the barrier application technology using benign control agents. Accordingly, a trial was conducted under natural field condition using different environmentally safe control agents namely Insect Growth Regulator (IGR) Nomolt 50 ULV, *Metarhizium anisopliae* var. *acridum* (Bio pesticide), and Phenylacetoneitrile (PAN) to assess their efficacy alone and in combination as barrier treatment against nymphal instars of Desert Locust. Ultra-Low Volume (ULV) was the control technique used. The barrier plots treated with Nomolt 50 ULV alone resulted in 85% Kill whereas, *Metarhizium* separately at recommended doses showed 30.24%. Nomolt alone proved its effectiveness as a barrier treatment. Integration of *Metarhizium* with Nomolt and Phenylacetoneitrile at half doses each showed 65.1% and 46.92% density reduction, respectively on the day 9<sup>th</sup> after treatment when sprayed as barriers. The combination of IGR and PAN with *Metarhizium* at half doses accelerated the *Metarhizium* infection and outperformed its efficacy when applied alone in recommended dose.



***Spraying Biopesticides at the Red Sea Coast  
(Feb, 2015) Sudan***

**Director’s visit to Djibouti:**

The Director of the DLCO-EA, **Dr. Stephen W. Njoka** visited Djibouti on 30<sup>th</sup> May 2016 where he met and briefed H.E. Mohamed Ahmed Awaleh, the Minister for Agriculture and the current DLCO-EA Council Chairman and both discussed on issues referring to the upcoming Council and Executive Committee Sessions that will be held in September, 2016.

**Courtesy visit to the African Union Commission:**

The Director of the DLCO-EA, visited the AU and met with the Commissions’ Deputy Chairperson H.E Erastus Mwencha on 7<sup>th</sup> June 2016.



The Director briefed H.E the Deputy Chairman on the role of DLCO-EA and its vital activities in securing food in the region. The two agreed that further relation and partnership should be organized and strengthened through the development of a joint MoU.

**MIGRATORY PESTS SITUATION  
April – June, 2016**



**DESERT LOCUST**

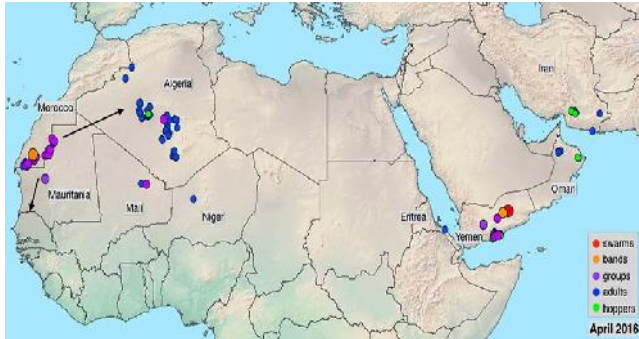
Desert Locust situation remained calm in the DLCO-EA Member Countries during the period April – June, 2016. However, the situation has worsened and remained extremely serious in Yemen as adult groups, hopper bands and swarms formed on the southern coast during the period April and June, 2016.

New swarms have continued to form in the interior of Yemen during the last two weeks of June. Some of the swarms moved into the central highlands and may continue to the Red Sea coast while others could still move to the summer breeding areas along the Indo-Pakistan border.

Crop damage was reported in parts of Shabwah, Hadhramaut, Marib and Al Jawf regions in Yemen. More swarms are expected to form during July and another generation of breeding could commence in August. Survey and control operations remain extremely

limited due to prevailing insecurity in the country.

In Northwest Africa, control operations continued against a declining number of hopper and adult groups in the southern part of the Western Sahara in southern Morocco and adjacent areas of northern Mauritania. **(Source; FAO Updates)**



**Areas showing some locust activities in April 2016, FAO-DLIS 2/5/2016**

**Areas showing some locust activities in June 2016, FAO-DLIS**



**New swarms form in Yemen June 2016, FAO-DLIS 5/7/2016**

### **INFESTATIONS OF GRAIN EATING BIRDS (*Quelea quelea*) IN THE REGION**

During April, May and June, *Quelea* birds infestations continued to occur and birds were reported causing damage to irrigated Rice and Wheat in Kisumu

and Narok Counties in Kenya respectively.

Since May, heavy and widespread *Quelea* infestations were also reported in Tanzania consequently, two spray aircraft have been deployed by DLCO-EA and they continued *Quelea* control operations in different districts of the Country.

During the operations, millions of *Quelea* birds, which could have caused heavy crop losses to the farming communities, were controlled by the aerial operations.

In Uganda, there was a report on the upsurge of *quelea* birds populations that resulted into the dispatch of a research team from Nairobi to assess the situation in April/May, 2016. The research team established that about 100,000 *quelea* birds were roosting and feeding within Kibimba rice fields in Eastern Uganda. There may be a need for aerial control in the region if the birds populations continue increasing.



**Group photo of the training participants**



***A flock of Quelea birds hovering over and feeding on rice fields in Tilda within Kibimba rice schemes in May 2016***

### **ARMYWORM (*Spodoptera exempta*):**

Medium size Armyworm outbreaks were reported in Tanzania during April, 2016. While minor infestations were also reported in the coastal parts of Kenya and the southeast parts of Ethiopia during May.

#### **1. ACTIVITIES ON COMMUNITY BASED DESERT LOCUST MONITORING AND REPORTING PROJECT**

The Desert Locust identification, information collection and reporting workshop was organized by DLCO-EA and FAO/CRC in Zeway, Ethiopia from 20<sup>th</sup> – 22<sup>nd</sup> June 2016. The workshop was attended by 14 Plant Protection Experts from six Regional States of Ethiopia (Somali, Oromia, Afar, Amhara, Tigray and Dire Dawa) and 2 Plant Protection Officers from Hargeisa, Somalia. The workshop was facilitated by qualified Senior Trainers from MoANR Mr. Dereje Mekonin, and two DLCO-EA staff; Mr. Mehari Tesfayohannes (CIFO) and Mr. Felege Elias (SIFO).

The Workshop was officially opened by the Director of the Plant Protection Directorate of Ethiopia Mr. Zebdewos Salato.

The Director of DLCO-EA, Dr. Stephen W. Njoka also addressed the participants during the opening and closing periods and handed Certificates to the participants at the end of the training session.

#### **INTER-REGIONAL WORKSHOP ON THE USE OF RAMSES:**

The FAO Commission for Controlling the Desert Locust in the Central Region (CRC) and the Desert Locust Information Service (FAO-DLIS) organized an inter-regional Desert Locust Information Officers workshop for the nationally designated Locust Information Officers drawn from the Central Region and the Southwest Asia Region during the period 22<sup>nd</sup> – 26<sup>th</sup> May 2016. The workshop was held at the FAO Regional Office for the Near East and North Africa (RNE) in Cairo, Egypt. Mr. Mehari Tesfayohannes (CIFO) and Mr. Felege Elias (SIFO) from DLCO-EA attended this workshop.

The workshop's objective was to strengthen the national early warning and reporting systems of the countries through informal discussions on the use and improvement of the various tools that are used by national Locust Information Officers in their daily work. On 24<sup>th</sup> May, the CRC Secretary, Mr. Mamoon Al Alawi had an aside discussion with the DLCO-EA staff and the staff of the MoA of Eritrea, Ethiopia and Djibouti on the following issues:

- Training program schedules that will be given to the MoA staff in Djibouti and Ethiopia on the safe handling and maintenance of spray equipment.
- Suggestion on the creation of regular communication platforms

through Skype and/or Slack for the Central Region countries in order to discuss eLocust and/or RAMSES problems and others.

**On 26<sup>th</sup> May, apart from the above subjects, there was an introduction and discussion on:**

- The New version of DeLCoPA as a tool aimed to help the National Locust Centers to be better prepared and to cope more efficiently with the incident of a Desert Locust emergency. It provides guidance to identify and mitigate constraints, gaps or operational weaknesses.
- Monitoring System of national Locust Preparedness (SVDN). This is software that is developed as a tool to measure the suitability of resources in tackling any Desert Locust development.

### **Workshop participants in session**



**Group photo of participants**

**DLCO-EA AIRCRAFT SITREP AS AT 30<sup>TH</sup> JUNE 2016**

<b>A/C RE.</b>	<b>5Y-BCJ BEAVER</b>	<b>5Y-BCK BEAVER</b>	<b>5Y-BCL BEAVER</b>	<b>5Y-KRD BEAVER</b>	<b>5Y-DLA CARAVAN</b>	<b>5Y-DLO BARON</b>	<b>5Y-BBB ISLANDER</b>	<b>5Y-DLD TURBO BEAVER</b>
<b>C OF A DUE DATE</b>	15/5/2017	<b>21/01/2017</b>	<b>24/09/2016</b>	<b>IN PROGRESS</b>	19/02/2017	<b>C OF A IN PROGRESS</b>	<b>DUE</b>	13/08/2016
<b>CHECK III</b>	05/4/2017	16/12/2018	<b>01/7/2018</b>	<b>IN PROGRESS</b>	N/A	01/07/2018	<b>DUE</b>	02/03/2017
<b>PROP. 5 YR OVERHAUL</b>	EMA 1253 28/3/2019	<b>E4109 29/7/2016</b>	EMA 1281 10/2/2018	<b>IN PROGRESS</b>	PC 1717 28/5/2018	01/07/2020	<b>DUE</b>	21/07/2017
<b>A/F HOURS Since Major Check.</b>	278:45	689:35	103:30	<b>00:00</b>	3988.47	04:40	<b>3174.00.TSN</b>	78:50
<b>ENGINE (S) HRS Since Overhaul.</b>	433:40	293:05	<b>987:30</b>	<b>00:00</b>	1657.49	PORT: 04:40 STBD: 04:40	<b>PORT: 1556:10 STBD: 1556:10</b>	414:25
<b>PROP. HRS Since O/H</b>	278:20	409:30	414:10	<b>00:00</b>	1741.39	PORT: 1352:05 STBD: 1383:45	PORT:216:00 STBD:216:00	297:15
<b>LOCATION</b>	<b>STANDBY ETHIOPIA</b>	<b>STANDBY NAIROBI</b>	<b>QUELEA SIAYA KENYA</b>	<b>UNDER ACCIDENT REPAIR</b>	<b>MWANZA UNHCR</b>	<b>MAINTENANCE NAIROBI</b>	<b>MAINTENANCE NAIROBI</b>	<b>RED LOCUST CONTROL TANZANIA.</b>

The Baron Registration 5Y-DLO has been successfully test flown after a major check inspection in our DLCO Hangar. The Aircraft is now awaiting the renewal of the Certificate of Airworthiness by Kenya Civil Aviation Authority. This passenger Aircraft will also be used to train our Pilots on currency and Instrument Ratings. This is a six seater twin engine Aircraft. It has a retractable undercarriage gear. It has two piston engines which operate on Av-Gas Fuel.

The Aircraft Registration 5Y-BBB is to be offered for sale worldwide on a “where-is, as is” basis. This is the Britten Norman Islander and has a total of 3174 Hours since new. This is a ten seater twin engine Aircraft. It has a fixed undercarriage gear. It has two piston engines which operate on Av-Gas Fuel. This Aircraft can be equipped with a spray gear system which can be ideal for large scale Armyworm controls.

The Spray Aircraft of the Organization are the famous Piston Radial Engine Beaver (DHC-2) Aircrafts. These are 5Y-BCJ, 5Y-BCK, 5Y-BCL & 5Y-KRD. These operate on Av- Gas fuel. The Turbine Beaver 5Y-DLD has a turbo prop engine and operates on Jet A-1 Fuel.