



Eritrea: Behind the Success of Desert Locust Control

Having recently concluded its desert locust control operations for the winter breeding season, the Ministry of Agriculture (MoA) is now preparing for the summer breeding season and controlling tree locusts in some parts of the Gash-Barka Region. This issue of the Monthly Newsletter aims to provide readers with general background about desert locust control in Eritrea. The Public Relations Division of the MoA has conducted interviews with Mr. Heruy Asghedom, Director General of the Agricultural Extension Department, Mr. Tedros Sium, Head of the Migratory Pests Control Unit, Mr. Tekleab Misghina, Director General of the Regulatory Services Department, and Mr. Tesfit Ghebregabhier, Head of the Crop Production Division and Desert Locust Operations Coordinator in the Northern Red-sea Region.

Question: Mr. Heruy Asghedom, could you tell us about Eritrea's background experience in combating desert locusts?

Answer: Generally, locusts have been the most dangerous pests in history. Prior to the advent of chemical pesticides, farmers were using different mechanical methods to control them. Out of all the migratory pests, the desert locust, if not controlled, is considered to be the most devastating.

In Eritrea, historical accounts of control operations for desert locust plagues go back to the 1960's. Since then, a number of monitoring and control operations have been conducted in targeted breeding areas of the country.

After Eritrea's independence, the Ministry of Agriculture organized

desert locust control operations in a more systematic and sustainable way by establishing temporary and permanent stations. In addition, new technologies have been recently developed globally that have allowed us to monitor habitat conditions and detect the first signs of locust increases so as to respond quickly before swarms develop.

Q: What's the country's strategy in controlling the pests?

A: The country's fundamental strategy is based on prevention. Annually, during the breeding seasons, survey and monitoring teams are deployed to potential local breeding areas, with climatic conditions and vegetation cover put into consideration. If any kind of locust hopper multiplication is observed, ground control operations begin immediately



because if the hoppers start to fly, it is very difficult to control them.

For invading swarms coming from neighboring counties, ground control is executed at night while the adult locusts are sedentary. To that effect, Eritrea doesn't let locusts fly from their breeding areas, and swiftly contains those coming from other countries. All in all, adequate preparation is one of the most essential elements that has contributed to the success of desert locust control programs.

Q: How do you evaluate the government's commitment in the desert locust control campaign?

A: The government gives high priority to the desert locust control programs because, if not handled properly, locusts pose a risk to food and nutrition security for humans and livestock. For this reason, the government allocates significant financial and human resources to strengthen survey and control operations. In addition, the MoA conducts weekly desert locust follow-up meetings.

Moreover, the MoA has developed national desert locust control guidelines that focus on survey, maintenance, control, safety and logistics. Accordingly, the



Mr. Heruy Asghedom

permanent and temporary stations perform their tasks in the winter breeding areas from September to April and in the summer breeding areas usually from June to September. It is also important to mention that all the necessary resources and personnel are generally mobilized in the stations in advance.

Q: How do you evaluate Eritrea's role in desert locust control organizations?

A: Desert locusts have no borders and the government believes that shared commitment to the

common dangerous pests can bring a sustainable solution. For this reason, Eritrea is a member of Commission for Controlling the Desert Locust in the Central Region (CRC), which was established in 1967. Members of this organization are Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Sudan, Syria, United Arab Emirates, Yemen, Djibouti, Ethiopia, and Eritrea. As well, Eritrea became a member of the Desert Locust Control Organization for East Africa (DLCO-EA) right after independence. This organization constitutes eight member countries: Eritrea, Sudan, Kenya, Tanzania, Ethiopia, South Sudan, Djibouti, Uganda, and Somalia. Interestingly, while the DLCO-EA's original headquarters was located in Eritrea, it was moved to Ethiopia during the late 1970's.

Eritrea, as a frontline country with winter and summer breeding areas, plays an important role in controlling desert locusts. Since the country controls the locusts before they fly, the threat to food security is reduced. Eritrea's efforts are often considered by the FAO and other regional organizations



to be “a good example” to other countries.

For instance, an FAO bulletin published in January 2016 stated that the effective management of the pest by Eritrea was commendable and should be an example for other countries to follow. The bulletin added, “This is really a tremendous achievement for Eritrea and leads to good monitoring and early warning not only for the country but also for the region.”

Q: What’s the role of development partners in the fight against the Desert Locust?

A: Eritrea works closely with organizations that are mandated to control migratory pests in general and desert locusts in particular. The FAO, CRC, DLCO-EA, and IFAD are among the most important development partners and they contribute greatly, particularly in terms of technical capacity development, experience sharing, early warning information, and supply of resources, such as pesticides, sprayer machines and personal protective equipment.

Q: Does the country have any alternative strategy other than using pesticides?



Locust sucking machine

A: Yes. The major problem that arises from using chemical control is its harmful effects on humans, animals, and the environment. For this reason, the MoA has been looking for alternative solutions to minimize chemical use. From late 2020, using bio-pesticides and harvesting locust hoppers have been considered as viable options.

Biological control is a strategy that focuses on long-term prevention of pests with the help of natural enemies of pests, including microscopic control agents like fungi, bacteria, and viruses. The MoA registered a biological pesticide - the Green Muscle (GM) (Metarhizium isopliaevar. Acridium) in 2016 with the National

pesticide list under the legal notice 114/2006. Among the promising bio-pesticides on desert locust control, Metarhizium acridium (strain IMI330189) is one of the currently available bio-pesticides.

From January to February 2021, the MoA piloted the bio-pesticide (Metarhizium isopliaevar. acridium) in three phases; namely in an open field (in Karora Sub-region), in a closed field in Sheeb sub-region, as well as in a controlled environment at the National Animal and Plant Health Laboratory (NAPHL). The trials offered promising results, even though they indicated that more capacity building is needed.

The other option is the use of locust harvesting or a “sucking machine”. In 2020, an assignment was given to a group of MoA engineers and plant protection experts to develop a locust harvesting machine. Subsequently, the experts developed an engine operated desert locust sucking machine and conducted a number of trials in the breeding areas of locusts to come up with concrete ideas about the final design of the machine in 2021. The ultimate goal of the machine is to harvest locust hoppers which can be used as poultry feed.



Biological control trials in an open field (in Karora Sub-region), NRS

Mr. Tedros Sium

Q: What are the major migratory pests which seek continuous follow-ups (in Eritrea)?

A: In Eritrea, the most serious migratory pests which need continuous follow-up and monitoring are the desert locust, African armyworm, fall



Mr. Tedros Sium

armyworm, and quelea-quelea (the grain eating bird). Out of these, desert locusts rank first in terms of outbreak coverage and magnitude of occurrence. If not controlled in time, desert locusts can cause heavy damage to crops and rangelands resulting in food insecurity and migration of both humans and animals.

Q: Which part of the country is more prone to desert locust outbreaks?

A: Eritrea has both summer and winter breeding areas and is globally considered as one of the principal breeding areas of the pest. A significant portion of Eritrea's land cover (around 7 million hectares) is favorable for locust breeding during favorable climate conditions.

Out of these, the winter breeding area is larger and covers around 4.7 million hectares, generally

along the country's long Red Sea coast. Moreover, this area has a long rainy season that extends from September to April.

The summer breeding area covers around 2.3 million hectares and is located in the Western lowlands of the country. It has a relatively shorter rainy season and usually starts in June and ceases in September.

Q: Which years have experienced the most serious desert locust outbreaks?

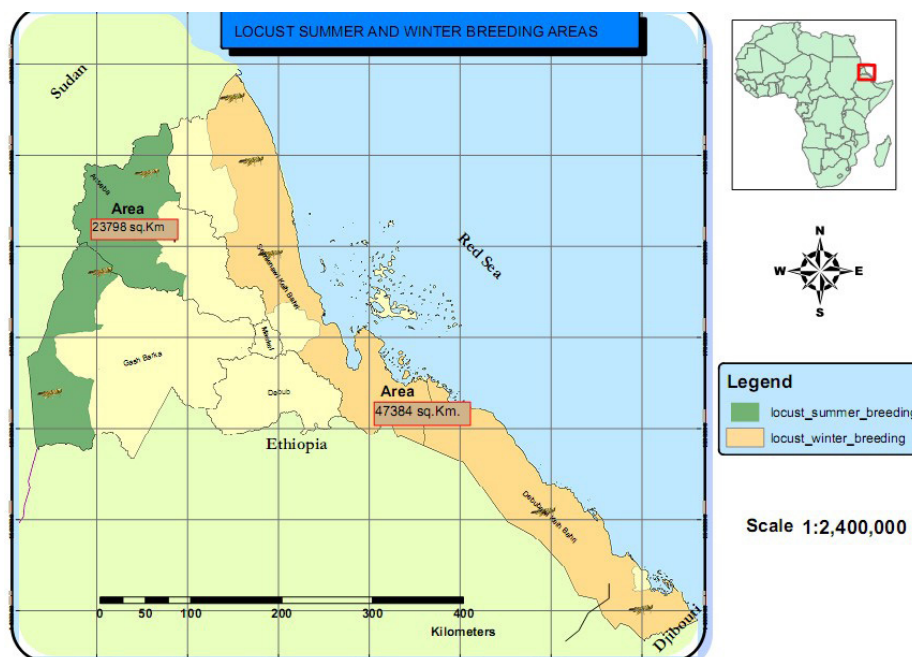
A: Even though the intensity and distribution differ from year to year, the country experiences desert locust outbreaks almost annually. According to reports from the MoA, after 1991, serious desert locust infestations occurred in 1995, 2006/2007, 2013/2014, and 2020. These ranged from 51,000-101,000 hectares of land.

Q: The East African region was seriously hit by a desert locust upsurge two years ago. How do you evaluate the country's performance in controlling the pest during those times?

A: Even though the 2020/2021 desert locust upsurge across the region was among the worst

in the past 50-70 years, it was not a surprise for Eritrea. The country was keenly following the developments in the region and it made utmost preparations. The Ministry of Agriculture, Ministry of Defence, and local administrations worked together to prepare and coordinate efforts.

Preparations included the establishment of temporary survey and control stations in summer and winter breeding areas, implementation of regular surveillance in both breeding and invaded areas, maintenance activities for more than 1,600 different sprayers, training on sprayer maintenance for 193 experts, and training on desert locust survey, control, and safety for 120 experts. In addition, extensive awareness raising campaigns were conducted, with the participation of more than 15,000 military personnel and farmers. The national mass media also played an important role in alerting the public. Moreover, necessary resources such as pesticides, sprayers, personal protective equipment, and other materials were collected and distributed to the control stations ahead of time.



After all these preparations were made, the first invading swarm from Ethiopia occurred in November 2019. Later on, waves of swarms arrived in the country from neighboring countries and across the Red Sea. In addition to these invasions, local breeding continued throughout the winter breeding areas on a large scale.

In August 19, 2020, a second and larger locust swarm migrated from neighbouring countries, covering almost the whole country. However, thanks to the high preparedness and great efforts of all stakeholders, more than 101,000 hectares of the infested land were successfully treated and put under control.

Q: How do you evaluate the crop losses due to desert locust outbreaks over the past few years?

A: During the most intensive locust upsurge of 2020-21, Eritrea successfully saved its crops and range land to the tune of 99.6 percent. This was mainly thanks to the commitment of agricultural experts, members of the EDF, administrators at all levels, communities, and development partners.

Q: Besides the desert locust, are there any locust types which are closely monitored by the unit?

A: Starting a few years ago, tree locusts have also become one of the important pests in all regions of the country and particularly in the western lowlands which borders Sudan. The tree locust outbreak is appearing all year round, and mostly attacks fruit and acacia trees. For this reason, this pest is being closely monitored and sufficient control activities are regularly exercised.



Mr. Tekleab Misghina

Mr. Tekleab Misghina

Q: What's the role of the Regulatory Services Department (RSD) in combating desert locusts?

A: The role of the RSD includes ensuring safety of all operators involved in controlling desert locusts while using pesticides, provide necessary guidance and advice to operators on proper application of pesticides, monitoring any environmental impacts (such as water pollution) and damage to insect pollinators, such as bees, resulting from excessive use of pesticides, and ensuring proper safeguarding and disposal of obsolete pesticides and empty containers.

Q: Having these roles, what are the major achievements of the RSD in desert locust controlling campaign?

A: During the whole course of the campaign, considerable efforts were made to promote the use of personal protective equipment by operators, extensive awareness raising events were organized, and promotional materials such as posters, stickers, and flyers were

widely circulated and played their role in ensuring safety.

In addition, in 2020 alone, about 15 tons of obsolete pesticides were safeguarded, and over 500 pieces of empty containers were collected. Some pesticide leakages in control areas, which affected soil and the environment, were effectively safeguarded and treated. Moreover, in collaboration with concerned bodies, vehicle washing facility was established at Gadem Halib.

Q: Maintaining safety measures during desert locust control operations remains a challenge. What are your future plans with regard to this issue?

A: To maintain and further strengthen safety measures, the RSD will promote the "Safety First" motto. It will strengthen and consolidate the ongoing efforts mentioned above.

Q: How does the MoA manage the disposal and safeguarding of empty pesticide containers?

A: Annually, during every desert locust campaign, on average 150-200 empty pesticide drums of

various sizes are left behind. During the past years, the practice was executed by safeguarding empty pesticide containers mechanically. Very recently, the MoA, in collaboration with the FAO has introduced a drum crusher to safeguard empty pesticide containers. The drum crusher which will be installed in the village of Daero Paulos will crush empty and thoroughly cleaned containers to less than 30 cm of thickness.



Training on safety

Q: What's your experience in executing coordinated efforts with relevant government bodies towards saving the environment from the use of excessive pesticides and related issues?

A: The RSD works very closely with concerned bodies, such as the Department of Environment, Department of Agricultural Extension, and the FAO. It participates in the purchase of protective equipment and promotes its appropriate use. It also works to avoid unnecessary use of pesticides and monitors proper storage and transport of pesticides.

Q: What are your short- and long-term plans to make the desert locust campaign as safe as possible?

A: With regard to short-term plans, the RSD intends to make sure that adequate protective equipment is available to all operators. The department also has a plan to improve awareness by preparing various safety promoting materials. The department will make sure that pesticides used in the campaign are properly transported, stored, and used. It will also safeguard any obsolete and leaking pesticides as well as empty containers.

When it comes to long-term plans, the RSD will promote and coordinate taking blood samples from operators participating in the desert locust campaigns before, during and after the operations to make sure that their health is not affected by pesticides. The

department will also collaborate with all MoA bodies and the Northern Red Sea administration to make sure that the vehicle washing site at Gadem Halib is operational, and it will push for the establishment of similar sites in Gash Barka and Debub. Moreover, the RSD will work for the proper disposal of stored obsolete pesticides and empty pesticide containers.

Mr. Tesfit Gebrezgabhier

Q: Why is the Northern Red Sea Region considered to be the major frontline for desert locust breeding and center of controlling operations?

A: The Northern Red Sea Region is the major front line for desert locust breeding because it possesses suitable conditions like moisture and optimal weather. When these conditions are fulfilled, desert locusts start to breed. That is why most of the control operations are conducted there. For that matter, the areas ranging from the sub-region of Gelalo to Karura are very favorable.

Q: How do you organize your regional experts and farmers in combating the Desert Locust?

A: Before the start of the rainy season, we usually conduct



Gadem Halib car wash infrastructure



Mr. Tesfit Gebrezgabhier

extensive surveillance in potential breeding areas. Afterwards, we discuss how and where to establish control stations. Accordingly, we organize and assign our experts. Here, the role of the community in general and that of the scouts in particular is very important – especially in detecting early locust breeding and informing climatic conditions. In addition, the role of local administrations and members of the EDF is commendable mainly during control operations.

Q: You don't let desert locusts fly from your region. What's the secret behind this?

A: The secret is with our organization and the extraordinary commitment of our experts and operators. For preventative purposes, we focus on surveillance more than the control operations. If you want the required success, you have to know where the locusts are breeding. You also have to know the different stages of their lifecycle in order to control them at the proper stage. Control

operations are conducted in such a way that they don't harm humans and the environment. In addition, we establish our control stations very close to the potential breeding areas, and conduct continuous meetings to evaluate the surveillance and control operations. Moreover, the MoA is always alert to mobilize pesticides, motorized sprayers, spray-mounted vehicles, and other operation materials every season.

Q: It is reported that you have recently closed your survey and monitoring operations for this season. How do you evaluate the condition in the ground and its future prospects?

A: This year, the climate was different and was not suitable for locusts. For this reason, our work focused more in surveillance. In

fact, migrating locusts were only seen in the sub-region of Gelalo around Buya on October 16, 2021 because it rained a bit there. We started control operations on November 11, and finished within a very short time. During the period, around 130 hectares of land was treated. In addition, since rainfall distribution in the region was fluctuating, monitoring and surveying were the most important interventions.

Q: How do you evaluate crop losses due to desert locust outbreaks in the NRS region over the past two to three years?

A: Like I said before, we do not let the locusts fly. As far as I know, I have never witnessed any kind of significant damage to crops and rangelands caused by desert locusts.



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