



DRONES FOR DESERT LOCUST CONTROL IN EAST AFRICA

Locations Kenya

Dates 01/09/2020 - Ongoing

Summary The desert locust, *Schistocerca gregaria* (Forsk.), is arguably the most destructive agricultural pest, globally. During 2019 and 2020, the changing weather created conditions that are favoured by the desert locust for rapid reproduction and migration and led to the pest spreading through the Horn of Africa, East Africa, Arabian Peninsula, South West Asia and West Africa. It is estimated that over 25 million people in Ethiopia, Kenya, Somalia, South Sudan, Uganda and Tanzania will face acute food insecurity in 2020 due to the desert locust plague.

This initiative tests the use of drones as a new technology to complement traditional desert locust management measures, including the development of Standard Operating Procedures for optimal use of the technology. The project is initially trialled in Kenya with the potential for scaling to other affected African countries.

The problem The causes of sporadic locusts' swarms of current global proportions are not fully understood, but it is widely agreed to be linked to favourable climate conditions (high rainfall and warm temperatures) and limited ability to implement preventive measures in far-to-reach breeding areas. These conditions are likely to become more regular given the backdrop of climate change. Left unchecked, the numbers of this crop-devouring insect can grow exponentially to hundreds of millions of individual desert locusts.

The locust crisis will continue to threaten food security across Eastern Africa unless mitigation measures are in place to track and combat them. New technologies, such as drones, can support current and future ground and aerial management efforts.

Drones can complement current spraying means, as they are very targeted and can treat infestations that might otherwise be difficult to reach with vehicle-mounted or hand spraying methods. Drones can target small swarms that may not be feasible to control by aircraft, populations that escape the aerial sprays and roosting locusts in inhabited areas or agricultural lands.

Drone technology is versatile. Its ability to be adapted to carry chemical payloads complete with specially fitted Ultra Low Volume spraying technology and spectral cameras allows for both targeted spraying in hard to reach areas as well as mapping to determine crop loss.

What we are doing

CABI and Astral-Aerial have partnered to pilot the use of drones to control the desert locust. The technology works by equipping Unmanned Aerial Vehicles (UAVs), or drones, with specially-designed and calibrated spraying equipment that enables mapping and precision spraying.

This pilot evaluates the benefits and efficiency of using drone technology as a complementary spraying method to manage locusts, including its effect on other beneficial insects and the environment. In the future, drone technology could be adapted for deployment of a biopesticide product based on the fungus *Metarhizium acridum* (GreenMuscle™ – a biological product CABI worked on and is now licensed through Elephant Vert) against hopper bands (a cohesive mass of young desert locusts) for sustainable control of future generations.

The drones will also be used to conduct post spraying mapping and ground sampling to determine the extent of desert locust eradication from spraying operations. Critical data on locust roosting behaviour on different crops and agro-ecologies will guide high precision targeting of the drone spray activities.

Results so far

The initiative combines the right match of technology, technical and scientific expertise from CABI, operational processes and procedures as well as regulatory compliance to validate the use of drone technology.

Findings will be used to determine if drones can be used as a complementary tool to sustainably manage locusts. This will include the formulation of Standard Operating Procedures (SOPs) and operating parameters for the safe and effective use of the technology including adaptation to deploy more environmentally friendly biopesticide options.

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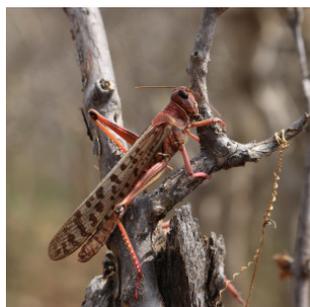
Foreign Commonwealth Development Office (FCDO) through the Frontier Technology Livestreaming

Partners

Astral-Aerial, County Governments in project areas, Ministry of Agriculture Livestock Fisheries and Cooperatives (MALFC)

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