Crop Spraying Drones deployed for Pest Control on Soya Bean Fields in Banket, Zimbabwe

Refilling Drone spray tank with water and pesticide

Crop Spraying Drone in the Soya Bean Field

Drone flying over waterlogged field and dispensing pesticide

Agriculture Drone in field at the end of a flight mission

OVERVIEW	
Flying Labs	Zimbabwe Flying Labs
Geographic area	Banket, Zimbabwe
Date range	May 2023
Sector program	EcoRobotics
Main SDGs	GOAL 2: Zero Hunger GOAL 8: Decent Work and Economic Growth GOAL 13: Climate Action

SCOPE	
Project stakeholders	Stodart Farm
People impacted	A farmer and community members.
Number of people impacted	An estimate of 20 people.
Problem	Soya bean crop was infested with the African Bollworm pest and the farmer was not able to use conventional farming equipment like tractor drawn boom sprayer and pivot due to waterlogging after heavy rainfall.

Project objectives	• Use the crop spraying drone to fly over the waterlogged soya bean crop fields and spray a combined crop chemical of chlorpyrifos and lambda-cyhalothrin to protect the crop and kill the Bollworm and caterpillars. • Save time by deploying drones to spray faster than traditional spraying equipment.
Scope	1. Conducted site assessment of the farm and soya bean crop. Established existence of bollworm and caterpillar pests. 2. Mixed crop chemicals into the spray tank and used less water than other spraying methods. 3. Created a flight path and deployed the drone to dispense insecticide over the waterlogged fields with soya bean crop.
Outcome	Spraying over the soya bean crop was completed in a much faster time than traditional equipment like tractor drawn boom sprayer. The day after spraying was completed many of the bollworms had been exterminated, fallen off the crop and were seen on the ground. The client was satisfied with the results and resolved to add spraying drones to the farm workflow for pest and disease management.
Impact	The farmer will be able to produce better quality and higher crop yields due to swift action taken to deal with pests in their fields. This in turn means the communities will benefit from having more food available due to better and increased yields produced by the farmer.
Challenges	N/A
Next steps	The client plans to integrate drones into their pest and weed control management processes.

COMMUNITY ENGAGEMENT AND STAKEHOLDER SUPPORT	
Consent for field operation	N/A
Community engagement activities	A group of farmers from the neighboring community came and witnessed the spraying process on the farm.
Community groups engaged with	Community in general.
Community attendance	About 15 farmers were in attendance.
Community feedback	The community commented that for the spraying operation to be more effective, the drone requires a larger payload and that the cost charged for spraying with a drone only makes sense at scale.
Stakeholder support	N/A

FIELDWORK	
Size of area	173 ha or 1.73 km2
Drone	DJI Agras T30
Payload volume	30 litres
Type of active ingredient	Chlorpyrifos and lambda-cyhalothrin, Dragon 175 EC
Total volume sprayed	3712 litres
Flight plan software	DJI Smart Farm
Flight height	2,5m
Number of flights	141 flights
Time invested in fieldwork	39 hours

DATA & OUTPUT	
Analysis tools	N/A
Analysis outputs	Map of area covered
Final outputs shared with stakeholders	Flight logs and spraying report
Data sharing	Google Drive