

The use of drones for precision agriculture



NDVI map of the analysed area



Pre-flight briefing on the drone platform and sensor

OVERVIEW

Flying Labs	Kenya Flying Labs
Geographic area	Thika Town, Kenya
Date	June 2019
Sector program	DevRobotics

SCOPE

Stakeholders (clients)	Delmonte Kenya LTD
Challenge	The advancement of drone technology has brought mixed reactions and misconceptions. The main objective of this project was to demonstrate and prove to the client, that drones are a profitable investment in the field of precision agriculture. Lack of regulations made it impossible to use drones in Kenya, thus drones are not yet widely popular in the country.
Scope	Promoting drones in various sectors is necessary to create a positive impact and accelerate the process of allowing drones in the airspace. The scope of the project was to understand the use of drones in precision agriculture in order to improve efficiency and production.

Outcome	Flight preparation and planning was jointly done with the client to help them understand the workflow. The drone demonstration was followed by image acquisition within the selected test area. The field work was completed by on-site data processing resulting in a precise NDVI map.
Next steps	Introducing and incorporating the drone technology and precision agriculture into the activity of the client. The main area of interest would cover approximately 5000 ha of pineapple field, mainly focusing on crop health, crop scouting, monitoring of the irrigation systems and fertilizer prescription maps.

DATA ACQUISITION

Demo Size of area	0.223 ha (2230 m ²)
Drone	Parrot Bluegrass
Sensor(s)	Parrot Sequoia
Flight plan software	Pix4D Capture
Flight height	20 m above ground level
GSD (Accuracy)	5cm/pix
Number of images acquired	156
Number of flights	1
Time invested in data acquisition	1 day
Georeferencing	Onboard GPS

DATA PROCESSING & ANALYSIS

Processing software	Pix4D Fields
Processing time	1 hour
Data products	NDVI Map
Analysis tools	Pix4D Fields
Analysis outputs	NDVI Map
Final outputs shared with stakeholders	NDVI Map https://drive.google.com/file/d/1v3tqNv6fkUb_f0NoLXTdEJJUbnYKkvZZ/view?usp=sharing