Supporting Regenerative Agriculture Using Multispectral Sensors with Drones

Colombia FL with the Paramo Guecha project team and Esri preparing equipment for multispectral flights

Altum multispectral camera assembly

Field work for prior survey for flight scheduling

Crop field where the flights were made

OVERVIEW

Flying Labs	Colombia Flying Labs
Location	Bogota (Subachoque) – Colombia
Date	March 2, 2024
Duration	3 training sessions of 4 hours each. Eight 45-minute flights. One monthly flight.
Sector program (optional)	EcoRobotics
Format	Online and In-Person
Co-organizer if applicable	Proyecto Guecha del Páramo, ESRI Colombia, UAV Latam Colombia and Colombia Flying Labs.
SDGs	GOAL 4: Quality Education GOAL 9: Industry, Innovation and Infrastructure GOAL 13: Climate Action GOAL 17: Partnerships to achieve the Goal

SCOPE & OUTCOMES

Type of training	1. Introduction training to drones 2. Sector-specific training of professionals: use of drones in precision agriculture 3. Youth/STEM training
Goal of the training	1. Create drone awareness 2. Develop drone data acquisition skills 3. Develop drone data analysis skills 4. Train and empower youth and the workforce of the future 5. Use of drones in precision agriculture
Expected outcome for participants	To verify that the use of new techniques in drone technology helps protect the land with less intrusive agriculture.
Confirmed outcome after training	The participants had the opportunity to explore the world of drones and see the application of multispectral sensors and the data that can be collected. With these demonstrations, student farmers can gain practical experience in new technologies and how to apply them to their daily lives.

Eventual next steps	To generate more crop optimization projects using learning about the use of drones. To continue supporting schools to engage the young students on drone technology and STEM. To schedule new workshops and outreach activities.

PARTICIPANTS

Profiles and number of participants	• 7 Professionals including consultants, an aeronautical engineer, researchers, pilots and teachers. • 10 local community members. • 30 School children (14-18 years old)
Name of participants' organizations	• I.E.D Ricardo Gonzalez – Subachoque • Colegio San Miguel Arcángel agricultural department
Gender ratio	Male 50% : Female 50%
Who paid for the training?	Free training
Participant fee rate (if applicable)	Not applicable
Scholarships offered?	No

CONTENT

Training components	The training had the following components: Introduction to the drone industry. Drone operation, safety, regulations and uses. Future potential use of drone technology. Sensor management. Drone Flight Demonstration.

Training resources used	- Powerpoint Presentation - Portatil HP - Project socialization meetings - Drones Demonstration and Exhibition ✔ DJI M300 RTK with H20T Camera ✔ DJI Mavic 2 PRO - Multispectral Thermal Mapping with DJI Matrice 300 and Micasense Altum 6.
Approaches and methods used	The main approaches used to achieve the training objectives were: - Analyzing the needs in fields and crops. - Gathering information on the current methods of conventional agriculture. - Listening to young people about their experiences of working in the crops with their parents. The training had two sessions, one theoretical and the other practical in the field with flights over crops. The field practices were carried out on crops.