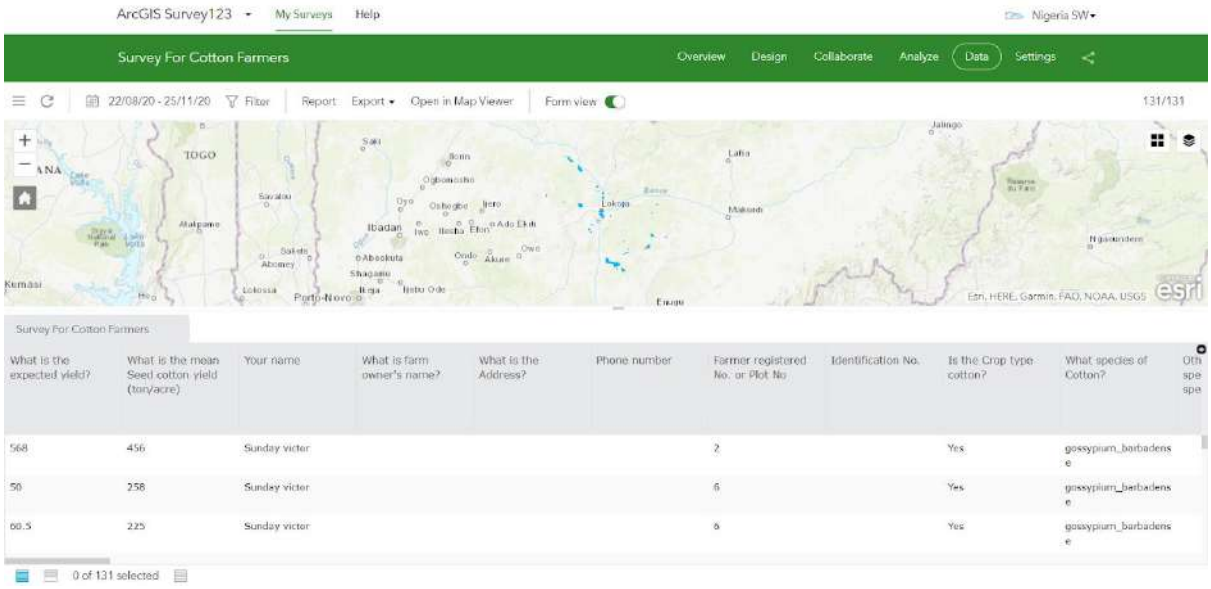
Improving the farming system of cotton in Nigeria

Crop Spraying drone ready to spray a cotton farm

Flying Labs and NACOTAN on field



Geospatial data from cotton farm mapping

OVERVIEW	
Flying Labs	Nigeria Southwest Flying Labs
Geographic area	Kogi State, Nigeria
Date range	August 2020- Present
Sector program	EcoRobotics
Main SDGs	Goal 1: No Poverty Goal 2: Zero Hunger Goal 8:Decent Work and Economic Growth Goal 13: Climate Change

SCOPE	
Project stakeholders	Agroxchange Technology Service Limited, National Cotton Association of Nigeria (NACOTAN)
Who benefits?	Cotton Farmers in Kogi State, Nigeria 10 youths as enumerators
Challenge	The main challenges to be addressed by this project are: ● Farmers' desire to improve the per capita yield of their cotton farms; ● Farmers' pressure to timely settle loans obtained from Central Bank of Nigeria (CBN) via NACOTAN; ● Farmers' efforts to increase income via access to markets; ● Farmers' wish to monitor their farms remotely and intelligently; ● Farmers' desire for technology-assisted farm management, e.g spraying, weather predictions, etc. ● NACOTAN's desire to monitor farmers' performances and their abilities to pay up the loans as arranged; ● Farmers' desire to have intelligent reports on their yields to support decision making in preparation for the next planting seasons; ● NACOTAN's desire to effectively manage the credit schemes and give adequate reports.
Scope	Within the scope of the project, we shall: i. Interface with and engage stakeholders for project signup and implementation; ii. Create robust interactive database for farmers' profiling; iii. Train and engage field enumerators for farmers profiling and farm geometries collection; iv. Provide appropriate technologies and support for (ii) and (iii); v. Provide crop spraying using drones; vi. Provide Artificial Intelligence-technologies and manpower for cotton farm spraying and vii. Develop and deploy a website with the integration of a web map for the Kogi State Chapter of the NACOTAN.
Outcome	The expected outcomes of the project include: 1. Fully mapped area of cotton farms in Kogi under the NACOTAN-CBN scheme; 2. Interactive mobile application for farmers' profiling; 3. Robust database housing farmers' profiles and farm geometries and attributes; 4. Remotely and intelligently monitored farms;

	5. Quick and accurate spraying of farms with drones; 6. User-friendly website with appealing User experience/User interface 7. Intelligent analytical reports for decision-making, forecast, etc.
Impact	Improve the optimal growth of cotton, compliance of the farmers with good agronomic practices, reduction in cost of farming and making agriculture more attractive.
Next steps	Integrating the crop spraying drone technology and smart farming into activity of farmers under NACOTAN. The main area of interest would cover approximately 3000 hectare of cotton fields mainly focusing on crop monitoring, good agronomic practices, precise application of pesticide, liquid fertilizer etc., and correcting the sizes of farms under NACOTAN.

COMMUNITY ENGAGEMENT AND STAKEHOLDER SUPPORT	
Consent for field operation	Held a meeting with NACOTAN management, NACOTAN agronomists and extension staff, NACOTAN farmers and Agroxchange Technology Service Limited
Activities to engage with the community	There was an official meeting with NACOTAN in August 2020
Community groups engaged with	NACOTAN Management
Community attendance	15
Community feedback	“It’s a welcome idea which will help reduce stress on farmers and increase yield capacity”

FIELDWORK	
Size of area	3000 ha (30 sqkm)
Drone	Joyance Crop Spraying Drone
Payload volume	16 liters
Type of active ingredient	Monocrotophos
Total volume sprayed	1.2 liters
Flight plan software	Agric assistance
Flight height	2 meters above ground
Number of flights	25
Time invested in fieldwork	25 days

DATA & OUTPUT	
Analysis tools	ArcGIS Pro, QGIS, Survey 123 and ArcGIS Online
Analysis outputs	Shape files, Excel sheets and Web Map
Final outputs shared with stakeholders	Cotton production Web Map
Data sharing	Email